A COMPARATIVE STUDY OF THE EFFECTS OF MECLOFENAMATE, DICLOFENAC AND PLACEBO, IN COMBINATION WITH PHYSIOTHERAPY, ON THE HEALING OF ACUTE QUADRICEPS AND HAMSTRING MUSCLE TEARS

THESIS PRESENTED BY JONATHAN F. REYNOLDS

B.Sc. (Physiotherapy) U.C.T.

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Faculty of Medicine
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ABSTRACT

A double-blind, placebo controlled research technique was used to determine the effects of two non-steroidal anti-inflammatory drugs, meclofenamate and diclofenac, in combination with physiotherapy treatment, on the rate and extent of healing of acute hamstring muscle tears.

Sixty patients were recruited and treated at No's 1 and 2 Military Hospitals in Voortrekkerhoogte and Wynberg, Cape Town, respectively. Patients were randomly allocated to one of three treatment groups: meclofenamate, diclofenac and placebo.

Patient assessments were performed on days 1, 3 and 7 of the 7 day study period. These assessments included pain assessment (visual analogue scale), swelling measurement (thigh circumference measurement at the site of the muscle tear) and muscle performance test (Cybex isokinetic dynamometer and data reduction computer). All patients received physiotherapy treatment on all 7 days of the study. This comprised early rest, ice, compression and elevation (RICE), and later, ultrasound and deep transverse friction massage. An intensive regime of strengthening and stretching exercises was used throughout the study, beginning with stretching and isometric exercises gradually moving onto isotonic exercises and aerobic exercise including swimming, running and cycling. No competitive sport was allowed during the study period.

Statistical significance was determined using the analysis-of-variance (ANOVA) test with an acceptance level of $p<0.05$.

No differences in pain, swelling or muscle performance were demonstrated between the three treatment groups. In terms of the pain and swelling assessments, the injuries did not appear to be very severe. Accordingly, the groups were divided into severe and non-severe sub-groups and statistical significance was determined using the ANOVA test with an acceptance level of $p<0.05$. A significant difference was found in the severe hamstring injury sub-group. In this group, pain reduction was greater in the placebo group than in the meclofenamate group on day 7. There were no other significant differences found in this sub-group analysis.

Relatively few side effects were encountered, and those encountered were mild. No patients were withdrawn from the study as a result of these adverse events. Drowsiness and gastro-intestinal disturbance were the most common side effects reported.

In conclusion, the study found that no benefit was gained from the use of meclofenamate or diclofenac in combination with physiotherapeutic modalities as compared to the use of physiotherapeutic modalities on their own. Thus the widespread use of NSAIDs in the treatment of acute muscle injuries may not be justified.

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GLOSSARY OF TERMS AND ABBREVIATIONS

ACCEL.	Acceleration: figures 4.7 and 4.10.
ANOVA	Two-way analysis-of-variance statistical test
AP	average power (measure of endurance, Cybex test)
CRF	Case report form or assessment form
Cybex II dynamometer	computerized isokinetic device which and data reduction records accurate measurements of muscle computer performance at various speeds
Cybex muscle test	($60^{o}.sec^{-1}$); expressed in Nm
diclofenac	diclofenac sodium -Warner Lambert, NSAID
Endurance test	low resistance, high speed Cybex muscle test ($240^{o}.sec^{-1}$); expressed in various units i.e. Joules for the total work and torque acceleration energy tests and Watts for the average power test.
GT	Good testing technique, Table 2.2
J	joules (unit of peak torque acceleration energy and total work, Cybex test)
meclomen	sodium meclofenamate - Warner Lambert, NSAID
musculo-tendinous unit	the structure which includes the muscle belly attachments to bone and tendon(s)
Nm	newton metres (unit of moment of force, Cybex test)
NSAID	Non-steroidal anti-inflammatory drug
Power test	high resistance, low speed
PT	Poor testing technique, Table 2.2 test
PTAE	peak torque acceleration energy (measure of muscle endurance, Cybex test)
RICE	rest, ice, compression and elevation
SAMS	South African Defence Force Medical Service
SADF	South African Defence Force

TW	total work (measure of endurance, Cybex test)
UCT	The University of Cape Town
VAS	Visual analogue scale (pain test)
W	watts (unit of work, Cybex test)
$W.cm^{-2}$	watts per square centimetre; measure of ultrasound output
+INJ	Too many injuries, Table 2.2

CHAPTER 1

INTRODUCTION

1.1 OUTLINE OF THE PROBLEM

Almost half of all sporting injuries seen in sportsmen and - women are those involving the musculo-tendinous unit (Bass, 1967). Acute muscle injuries are the most common of such injuries (Almekinders and Gilbert, 1986).

Non-steroidal anti-inflammatory drugs (NSAID's) are the most widely used drugs used for sports-related trauma amongst South African athletes (Irving, 1989). There have been few studies performed to investigate the efficacy of such medication and most of these have supported the use of NSAID's : very few of these studies, however, have been performed with sufficient objectivity (Kellett, 1986). Only 7 of the 44 most recent studies performed in the past 16 years were done so scientifically; for example some studies included different types of injuries, whilst some investigated one NSAID against another without any placebo control.

Only 7 studies utilized both a single injury type and a placebo group as a control, of these only 3 showed a

favourable result for the treatment group. It is interesting to note that only one out of these 7 studies used acute muscle trauma : the other studies all utilized acute trauma of the knee or ankle.

Recently Almekinders and Gilbert (1986) showed histologically and biomechanically that injured muscle treated with NSAIDs tended to weaken in the immediate post-injury period whilst untreated muscle failed to do so. Reynolds (1987) and Huskisson et al. (1973) found in placebo controlled studies performed on injured sportsmen that there was no difference between NSAIDs treated and placebo treated groups. This view is shared by Andersson et al. (1983); Dupont et al. (1987); Goldie et al. (1974); Jenner (1987) and Van Marion (1973).

Reynolds (1987) compared meclofenamate to placebo, in combination with physiotherapy, in a double-blind study of patients with acute quadriceps or hamstring muscle tears. Patients were tested for strength and endurance deficits, pain and swelling on days 1, 3 and 7 after the injury. The findings indicated that there were no significant differences between the two groups, although small sample sizes were used (there were only 5 patients in each group).

Various physiotherapy modalities have been tested in the past and proven to be successful in achieving desirable effects in the treatment of acute muscle injuries: the use of rest, ice application, compression bandaging and elevation of the injured

area is effective for reducing bleeding and swelling in the first 24-48 hours after injury (Bierman, 1955; Laing et al. 1973). Ultrasound therapy has been shown to have a favourable effect on the healing of soft tissue injuries (Dyson et al. 1968; Mc Diarmid and Burns 1987) and its use is advocated in the treatment of such injuries (Fitch and Gray, 1974 and Burry, 1975; Oakes, 1981). Deep friction massage is a poorly documented treatment technique but is regarded as being very useful in the treatment of acute muscle trauma (Winter, 1968; Chamberlain, 1982; Cyriax, 1984). Intensive rehabilitation, for example stretching and strengthening exercises, plays a vital role in returning the injured sportsman to the sports field (Burkett, 1970; Fitch and Gray, 1974; Millar, 1975 and 1976; Oakes, 1981; Garrett, 1990).

Whilst there seems to be consensus in the literature regarding the use of physical therapy or physiotherapy treatment for acute muscle injuries, the same cannot be said for the use of NSAIDs. The controversy seems to centre around the merits of the inflammatory response to injury: macrophage collagenase production is thought to be controlled by prostaglandin levels (Wahl et al. 1977) but not all prostaglandins are believed to be responsible for the inflammatory reaction. On the other hand the presence of macrophages, lymphocytes, bradykinins and other inflammatory cells is thought to be important in removing cellular debris and necrotic tissue following injury, thereby creating the correct environment for healing to take place. Well controlled laboratory experiments have shown that although NSAIDs reduce

swelling and inflammation, they also reduce maximum failure load in the muscle and slow down the clearance of cellular debris (Almekinders and Gilbert, 1986; Kellett, 1986).

It becomes apparent, therefore, that the question to be asked is whether NSAIDs should be used in combination with the physical modalities or whether the injuries should be treated using the physical modalities alone. In view of this controversy, it was decided to determine objectively whether sodium meclofenamate and diclofenac sodium (both NSAIDs) used in combination with physiotherapy treatment, is more effective than the physiotherapy treatment on its own, in the management of acute muscle injuries.

A double blind study design was used on patients with acute strains of the hamstring and quadriceps groups of muscles. Patients were divided into three groups; patients in group A received meclofenamate (NSAID), group B received diclofenac (NSAID) and group C received placebo. Patients were assessed on days 1, 3 and 7 after injury for pain (visual analogue scale), swelling (thigh circumference measurement) and muscle power and endurance (Cybex isokinetic test). All patients received the same physiotherapy treatment after the injury.

This is the first time that scientifically objective data, such as data obtained via an isokinetic dynamometer and data reduction computer, has been used in a study of this nature. It is therefore

believed that the results of this study will help to clarify the need for NSAIDs following acute muscle trauma.

1.2 HYPOTHESIS AND NULL HYPOTHESIS

1.2.1. Hypothesis

Acute muscle injuries treated with meclofenamate or diclofenac, in combination with physiotherapeutic modalities (such as RICE, ultrasound, deep friction massage and stretching and strengthening exercises), heal faster than those treated with the physiotherapeutic modalities alone.

1.2.2. Null Hypothesis

Acute muscle injuries treated with meclofenamate or diclofenac, in combination with physiotherapeutic modalities (such as RICE, ultrasound, deep friction massage and stretching and strengthening exercises), heal as fast as those treated with the physiotherapeutic modalities alone.

1.3 LIMITATIONS

In order to ensure accuracy and objectivity, the study was limited to the assessment of muscle injuries to the quadriceps and hamstring muscle groups. Inclusion of other injuries for example

strains of other muscles, or joint sprains, would detract from the accuracy required to achieve a meaningful result.

Injuries assessed should be of maximum severity in order for the largest possible improvement or deterioration to be seen in each test.

An extended period might be necessary to obtain a larger sample size, for example, in excess of 60 patients.

1.4 ETHICAL CONSIDERATIONS

A project proposal was drafted and submitted to the University of Cape Town Higher Degrees Committee for approval, which was granted.

Permission was also granted by the Surgeon General of the South African Defence Force (SADF) Medical Corps for the study experimentation to be conducted at the No's 1 and 2 Military Hospitals (Appendix 5).

The details and implications of the study were explained to all patients and all signed a written consent form to this effect before they were admitted to the study. This consent form was issued in English and Afrikaans (Appendix 1).

The NSAIDs used were registered drugs and were considered safe in the dosages given. A doctor was always present at each initial visit to assess the patient and to prescribe the medication. Any adverse events reported during the study were reported to the doctors available and appropriate action was taken.

Physiotherapy modalities used are commonly used modalities for the treatment of such injuries.

Strict confidentiality was maintained at all times concerning the patient assessment forms.

CHAPTER 2

LITERATURE REVIEW

2.1 ACUTE MUSCLE INJURIES

2.1.1 Introduction

The focus of research into sporting injuries has been on serious ligamentous and skeletal injuries rather than on the less serious but far more common acute muscle strains (Almekinders, 1990).

Little is known of the aetiology and treatment of these acute muscle injuries and very little objective and scientific research has been performed in this area of sports medicine (Kellett, 1986; Irving, 1989).

It is widely recognized that physical modalities play an important role in the management of acute muscle injuries, for example, the use of RICE (an acronym standing for Rest, Ice, Compression and Elevation which was popularized by Trickett in 1965), ultrasound (Dyson, 1987; Partridge, 1987), deep friction massage (Chamberlain, 1982; Winter, 1968) and exercise therapy involving stretching and strengthening exercises (Oakes, 1981).

Non-steroidal anti-inflammatory drugs (NSAIDs) have become popular in the treatment of soft tissue injuries during the past 20 years. However, their use has become a controversial issue recently because very little sound scientific evidence exists to warrant their use (Kellett, 1986; Irving, 1989), particularly following recent research done by Almekinders (1990) which has shown that very few studies researching the efficacy of NSAIDs have been performed with suitable control, for example placebo controlled, and very few were performed with scientific objectivity.

2.1.2. Causes

Acute muscle strain injuries most often occur during eccentric contraction of the muscle and this is particularly so in muscles that cross two joints, for example the hamstrings, rectus femoris, triceps brachii, gastrocnemius and others. Possible reasons for this are that higher forces are exerted during eccentric contractions as compared to concentric contractions; muscle force production is higher when the muscle is activated while lengthening as opposed to being activated while being held at the same length or allowed to shorten. The function of the "two-joint" muscles during explosive sports such as rugby, sprinting or soccer, is to decelerate the joint by contracting eccentrically. In doing this they must absorb a great amount of energy, and frequently this muscle cannot absorb the required amount of energy, resulting in muscle strain injury (Garrett, 1990).

This theory is contrary to the recently held belief that these injuries were due to muscle strength imbalances between the quadriceps and hamstring muscle groups during concentric muscle contractions (Burkett, 1970).

Other contributing factors which predispose muscles to acute injury are:

* "two-joint" muscles, being predominantly fast twitch (type II) muscle type, require faster contraction time (Garrett, 1990)
* muscle fatigue (Froimson, 1969; Garrett, 1990)
* previous inadequately treated injury (Burkett, 1970)
* inadequate warm-up and muscle inextensibility (Sutton, 1984; Safran et al. 1989).

Tearing normally occurs at the musculo-tendinous junction in adults (Burry, 1975; Miller, 1977; Almekinders and Gilbert, 1986; Garrett et al. 1988). Although surgical exploration of such injuries has not been attempted there are a number of references regarding surgical findings which confirm this belief; this has been confirmed recently using magnetic resonance imaging in the hamstrings (Garrett et al. 1989).

2.1.3. Pathology and Healing

In order to manage soft-tissue injuries effectively it is important to know the processes which take place following their occurrence: these will be described below.

The healing of acute soft-tissue trauma has been shown to take place by scar formation and not by regeneration of damaged tissue (Frank et al. 1983). Models for such a process have been described in the past, usually for crush injuries such as that described by Burry (1975). This type of injury is uncommon, however, and a model put forward by Oakes (1981) in which he describes the process in an overstretch injury, which is more commonly seen (see 2.2.2.) is summarized below.

Oakes(1981) describes three phases of repair:

phase 1: Inflammation (0-72 hours)

Vascular disruption, red blood cell extravasation and blood clotting predominate early on. Macrophages and monocytes are activated and these migrate to the damaged area. Burry (1975) points out that the basal lamina is normally left intact in the stretching injury and this forms the foundation for repair. Histamine, serotonin, prostaglandins and leukotrines are released by mast

and other cells and these contribute to vascular "leakiness" which leads to oedema and later fibrosis (Muckle, 1980).

phase 2: Repair

Macrophages clear away debris and blood clot and vascular budding is triggered by fiboblast migration. Collagen is synthesized in a disorientated form (awaiting phase 3) and continues to grow in diameter and also begins to contract. this is believed to lead to muscle stiffness (Evans, 1980).

phase 3: Remodelling

This is a natural and important sequel to phase 2 and is characterized by further collagen growth and re-alignment by tensile loading on the muscle which in turn helps to strengthen the muscle (Evans, 1980; Wilkerson, 1985).

Almekinders and Gilbert (1986) researched the effects of NSAIDs in the healing of acute muscle trauma using a standardized strain of the rat tibialis anterior muscle. They found histologically that early macrophage inhibition and a macrophage filled basal lamina were major characteristics in the early period; myotubes filled with cytoplasm were a dominant feature at 4 days post-injury and almost complete regeneration with prolific endomyseal fibrosis predominated at 11 days. This slowed healing process was shown to

have taken place much faster in the groups who did not receive NSAID.

Generally soft tissue injuries will keep the sports-person off the field for between 7 and 10 days (Millar, 1976; Bouchier-Hayes and Jones, 1979; Milenovi'c and Mili'c, 1980; Muckle, 1980; Simmons et al. 1982; Commandre, 1983; Edwards et al. 1984). Many of these injuries would resolve spontaneously (Bourne, 1980; Walker et al. 1984) but pain being the biggest limiting factor in delaying full rehabilitation (Crean, 1981) may prolong the healing time.

Re-occurrence of the injury is always a problem, and in this regard strength testing is vital to ensure that maximal loading of the muscle may recommence (Oakes, 1981). Failure load (determined mechanically on animal muscle) is representative of the degree of healing in muscle. Therefore testing muscle function mechanically for example using a Cybex dynamometer, which isotonically measures torque generated by muscle at a given joint, will give an indication of the possibility of recurrence of injury (Almekinders and Gilbert, 1986). Millar (1976) pioneered a rigorous regime in treating acute gastrocnemius tears and this involved early ice application, stretching and strengthening exercises, short-wave diathermy, ultrasound and interferential therapy. Of a sample of 400 subjects, 68 % were symptom free (no pain and full extensibility) within a week. Of 94% of the cases that were followed up only 1% had recurrence of injury within 3 months.

It is apparent from this study of Millar that the re-occurrence of injury depends on the management of such injuries and not on their severity.

2.2 PHARMACOLOGY

2.2.1. Introduction

Non-steroidal anti-inflammatory drugs (NSAIDs) are a group of compounds which share similar properties being anti-inflammatory, anti-pyretic and analgesic (Abbott et al. 1980; Simmons et al. 1982). With analgesics, these are possibly the drugs most in demand in South Africa today for the early treatment of injuries during the initial inflammatory phase described above (Irving, 1989).

Relatively few studies have been performed on these compounds over the years and most of those performed lack suitable objective controls; they fail to comment on any other concurrent management or show genuine advantage of such medication.

Almekinders and Gilbert (1986) showed histologically and biochemically that piroxicam (NSAID) delayed muscle regeneration but partially prevented early weakening and increased maximum failure load following a standardized strain of the rat tibialis anterior muscle. They suggest that this will be the trend with other NSAIDs, which are inhibitors of prostaglandin. Vogel reported in 1977 that NSAIDs could enhance the strength of collagenous

tissue in various organs, whilst Lord et al. (1980) found that prostaglandins of the F series, which are formed after the initial inflammatory phase, enhance the formation of ground substance which favours healing. This controversy helps to illustrate the lack of understanding of these injuries.

As has been mentioned earlier, very few studies have been performed with the necessary objectivity to prove conclusively that NSAIDs are warranted in treating acute soft tissue injures. A majority of these studies lack either the control which the inclusion of a placebo group would give, or they include assessment of many different types of acute muscle injuries. It is felt that these injuries cannot be compared in a scientific study of this nature.

Almekinders (1990) recently reviewed the literature on the use of NSAIDs in the management of soft tissue sports injuries. In this presentation, he categorized the studies performed into two tables, the first being those studies which were performed without the control of a placebo, and the second being those that were performed with the control of a placebo. On reviewing the literature for this study, a few more studies were found which tested the efficacy of NSAIDs in the treatment of soft tissue sports injuries.

These studies will now be summarized in three tables, which will classify the published studies into poorly controlled (being studies which have been performed without a placebo control group,

have studied more than one injury type, have failed to use objective means to determine efficacy or all of the above), moderately controlled studies (which have used a placebo as a control but have failed to use objective means in testing efficacy or have used more than one injury type, or both of these) and well controlled and scientifically sound studies (which have used a placebo as a control, have used only one injury type and have used at least one objective test in determining efficacy).

Table 2.1 POORLY CONTROLLED STUDIES OF NSAID EFFICACY IN THE TREATMENT OF SPORTS RELATED INJURIES

REFERENCE	INJURY	RESULT
Abbott et al. 1980	soft tissue	difference
Aghababian, 1986	ankle	difference
Aghababian et al. 1986	low back	difference
Anderson & Gotzsche, 1984	sports injuries	no difference
Beveridge, 1985	soft tissue	difference
Blackhouse et al. 1980	musculoskeletal	no difference
Bodiwala, 1982	soft tissue	difference
Bouchier-Hayes, 1984a	musculoskeletal	no difference
Bouchier-Hayes et al. 1984b	strains & sprains	no difference
Brown et al. 1986	low back	difference
Bourne, 1980	sports injuries	difference
Commandre, 1983	sports injuries	difference
Chiapuzzo, 1979	soft tissue	difference
Duncan & Farr, 1988	sprains, knee & ankle	no difference
Edwards et al. 1984	soft tissue	difference
Fulkerson & Folcik, 1986	knees	no difference
Haig, 1988	soft tissue	no difference
Heere, 1988	musculoskeletal	difference
Indelicato, 1986	strains & sprains	no difference
Mann, 1983	soft tissue	no difference
McIllwain & Platt, 1988	soft tissue	difference
Muckle, 1974	soft tissue	difference
Muckle, 1977	soft tissue	difference
Muckle, 1980	sports injuries	difference
Noble, 1977	running injuries	difference
Simmons et al. 1982	soft tissue	difference
Stull & Jokl. 1986	tennis elbow	difference
Walker et al. 1984	sports injuries	difference
Williams & Engler, 1977	sports injuries	difference

The studies tabled above were all performed without a suitable control group, for example a placebo group, and most were performed on various types of different injuries. In addition, subjective measures were used to assess patient progress. These studies are therefore of little value as they cannot be assessed on scientific grounds.

Table 2.2 MODERATELY CONTROLLED STUDIES OF NSAID EFFICACY IN THE TREATMENT OF SPORTS RELATED INJURIES

REFERENCE	INJURY	RESULT	COMMENT *
Andersson et al. 1983	ankle	no diff.	+INJ
Fitch & Gray, 1974	soft tissue	drug better	+INJ,PT
Huskisson et al. 1978	soft tissue	no diff.	+INJ,PT
Jenner, 1987	soft tissue	no diff.	+INJ
Krishnan, 1977	bursitis/ synovitis	drug better	+INJ,PT
Lereim & Gabor, 1988	soft tissue	drug better	+INJ
Santilli et al. 1980	sports injuries	drug better	+INJ,GT

* Key : +INJ = too many injuries; PT = poor testing technique; GT = good testing technique.

The above studies all used a placebo group as a control. However, most of these studies compared too many injuries and failed to use objective measures to determine the efficacy of treatment (Fitch and Gray, 1974; Krishnan, 1977; Huskisson, 1978). Santilli et al. (1980) compared many different types of injury but used objective measures such as swelling and passive functional capacity, in addition to subjective means, to determine the validity of the drugs. Andersson et al. (1983) also used an objective test (water displacement of the ankle to determine swelling) but they used too

many different types of ankle injury and they failed to use a placebo group as a control.

Table 2.3 WELL CONTROLLED STUDIES OF NSAID EFFICACY IN THE TREATMENT OF SPORTS RELATED INJURIES.

REFERENCE	INJURY	RESULT
Dupont et al. 1987	ankle sprains	no difference
Goldie et al. 1974	ankle injuries	no difference
Hutson, 1986	knee injuries	drug better
Mc Latchie et al. 1985	ankle injuries	drug better
Reynolds, 1987	quad. & hamstring	no difference
Van Heerden, 1977	knee injuries	drug better
Van Marion, 1973	ankle injuries	no difference

The studies listed in Table 2.3 are all placebo controlled studies which were conducted on an injury limited to one anatomical area. However, the degree of objectivity in the testing techniques is still not sufficient in most of these studies for example, Hutson (1986) used subjective measures to determine drug efficacy, whereas van Marion (1973), despite commenting on the subjectivity of previous studies, failed to use truly objective measures to determine the effect of indomethacin on ankle injuries. The different types of ankle injures also varied and therefore this detracts from the validity of the study.

It is interesting to note that only one study was performed on muscle injuries alone (Reynolds, 1987).

As described earlier, certain substances are released into the area of trauma after an injury, the most important of these being histamine, serotonin and bradykinin (Oakes, 1981). These substances

have a vasodilatory effect and they stimulate the release of prostaglandins which sensitize the skin to chemical and mechanical stimuli (Moncada et al. 1975). Their release from the hypothalamus has a pyrogenic effect (Vane, 1971).

NSAID's are known to interfere with prostaglandin production by inhibiting the cyclo-oxygenase enzyme. They are also known to inhibit neutrophil (hence anti-pyretic) and monocyte/macrophage activity (Almekinders and Gilbert, 1986). For these reasons NSAIDs are thought to be useful in the treatment of acute soft tissue injuries.

All NSAIDs are easily absorbed from the gastro-intestinal tract where they bind to plasma proteins. They have a short half life and most are eliminated by hepatic metabolism (Huskisson, 1978).

2.2.2. Sodium meclofenamate

Sodium meclofenamate (meclofenamate) an anthranilic acid derivative is a NSAID exhibiting anti-inflammatory, analgesic and anti-pyretic activity (Ebner et al. 1983). It has been shown to be safe and effective in the treatment of rheumatoid arthritis, osteoarthritis, ankylosing spondylitis, traumatic oedema and extra-articular rheumatic diseases (Rennie, 1977; Multz et al.1978; Wilkens, 1978; Ebner et al. 1983; Boussina et al. 1983; Honorato-Perez et al. 1983).

In these controlled trials on conditions such as post-traumatic edema, ankylosing spondylitis, rheumatoid arthritis, osteo-arthritis and extra-articular rheumatic disease, using oxyphenbutazone, indomethacin, aspirin, and placebo as controls, it has compared favourably using subjective pain scales and swelling measurement as criteria for assessment. However, no studies have been performed using meclofenamate on acute muscle trauma. Fewer side effects were reported in the meclofenamate groups, which is contrary to the opinion of Katz (1977) who reported anthranilic acid derivatives to have a low potency compared to aspirin, and to predispose to gastro-intestinal problems.

Reynolds (1987), however, in a double-blind placebo controlled "mini" study, found that meclofenamate was no more effective than placebo in patients treated with physiotherapy for acute quadriceps or hamstring muscle strains. As mentioned before though, the sample sizes (n=5 in each group) were too small to obtain a meaningful result.

The recommended dosage for meclofenamate is one 50 mg capsule 3 times per day.

The following are contraindications to taking meclofenamate:

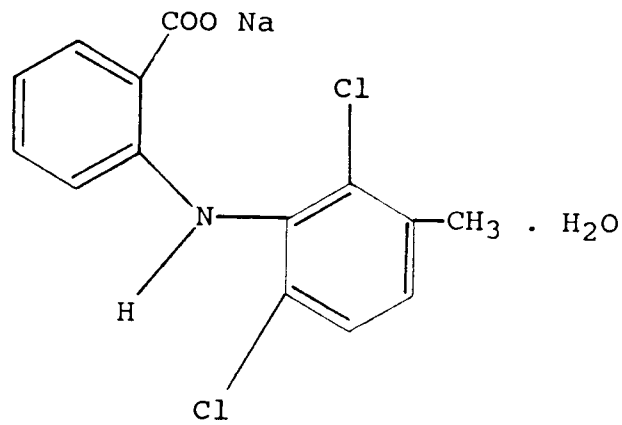
* patients with gastro-intestinal disease
* Patients with impaired hepatic, renal or haemopoietic function

* children under 14 years
* pregnant women or nursing mothers
* patients with a sensitivity to aspirin or other NSAID
* patients with asthma or other allergic condition.

Structure and classification

Figure 2.1 meclofenamate structure

The chemical structure of sodium meclofenamate monohydrate [N(2,6 dichloro-m-tolyl) anthranilic acid sodium salt] is:



2.2.3. Diclofenac sodium

Diclofenac sodium (diclofenac) is an acetic acid derivative (Moncada et al. 1975) and is a non-steroidal anti-inflammatory drug whose properties are analgesic (van Heerden, 1977), anti-pyretic

(Polman and Huybers, 1980) and anti-inflammatory (Duncan and Farr, 1988).

Like other NSAIDs it owes its effect largely to its ability to counter the formation of prostaglandin from arachidonic acid.

Numerous trials have been conducted in many spheres of medicine using diclofenac in dosages ranging from 25 mg to 150 mg, 1 to 3 times daily (Voltaren, 1981).

Duncan and Farr (1988) compared diclofenac and aspirin in a randomized, double blind, parallel group trial in the treatment of acute sports related strains and sprains. They found that diclofenac allowed for an earlier return to sporting activity than aspirin. Both drugs were tolerated well.

Diclofenac is eliminated via the kidneys (66 %) and in the bile and faeces (33%) - 40 % of the dose is excreted in the first 12 hours of administration and 90 % from 72 hours onwards (Voltaren, 1981).

Structure and Classification

The chemical structure of diclofenac sodium (sodium-[0 [(2,6 dichlorophenyl) -amino] -phenyl] cetate) is as follows:

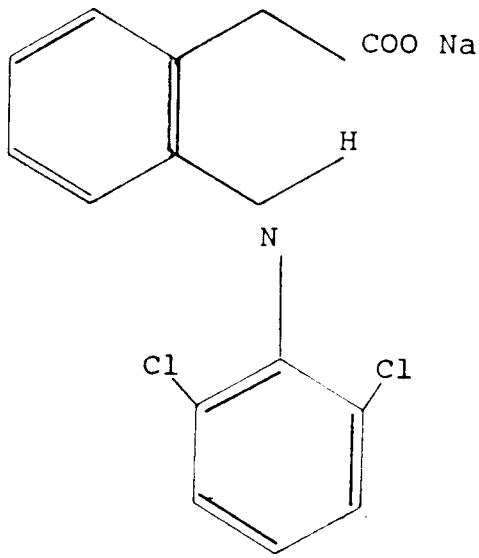
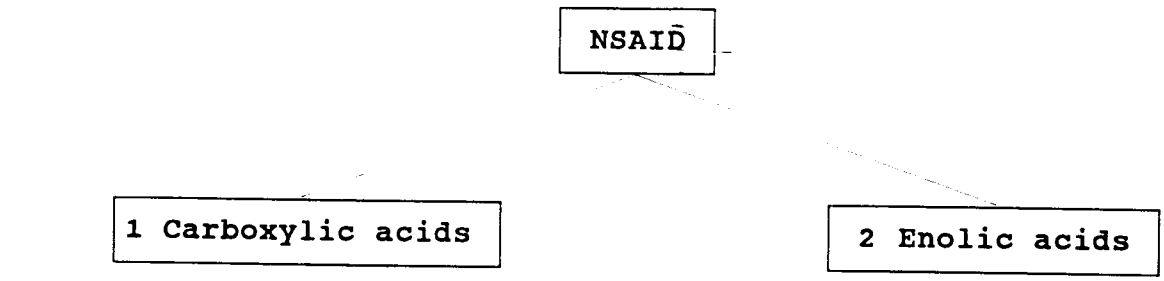
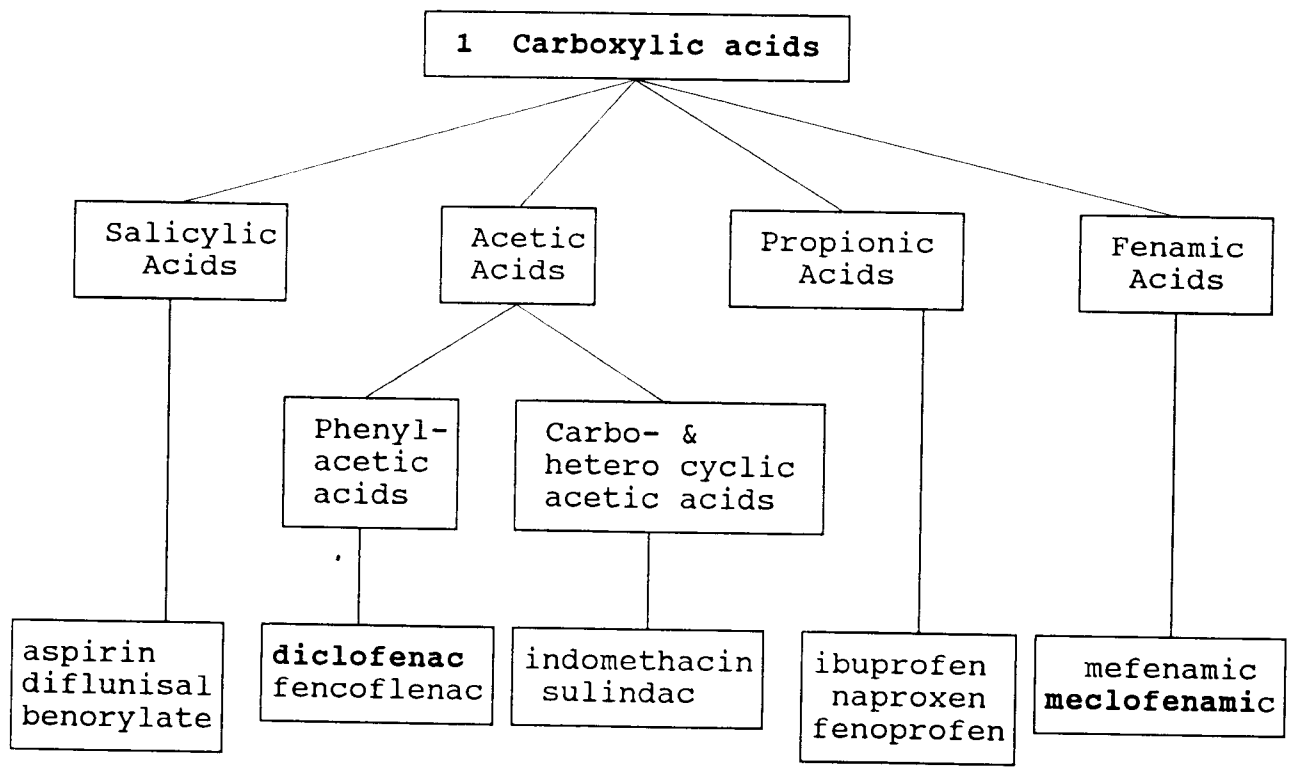
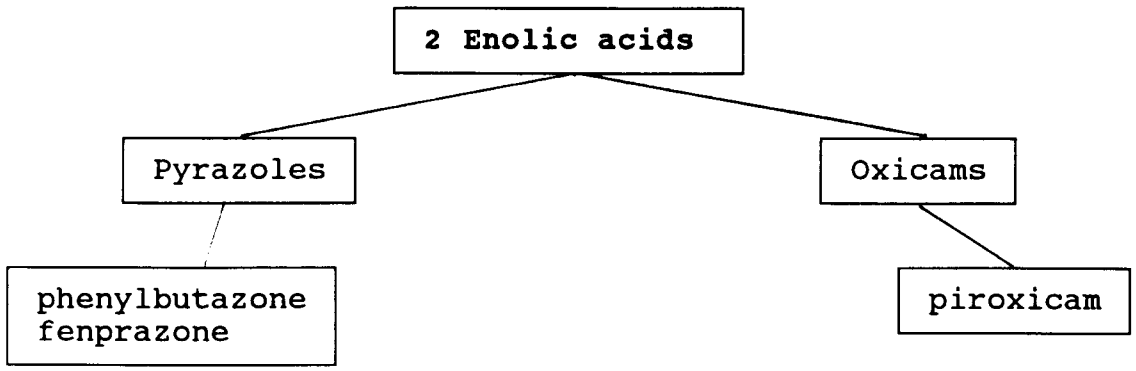


Figure 2.2 diclofenac structure (Voltaren, 1981)

2.2.4. Figure 2.3 NSAID Classification (Moncada et al. 1975)







2.3. PHYSIOTHERAPY

2.3.1. Introduction

The value and use of physical or physiotherapeutic modalities are poorly documented in studies that have been performed to test the efficacy of NSAIDs. These measures are usually not mentioned, occasionally attention is paid to them (Huskisson et al. 1973; van Heerden, 1977; Chiapuzzo, 1979; Fitch and Gray, 1980; Milenovi'c and Mili'c, 1980; Santilli et al. 1980) and in others physiotherapy is specifically excluded (Muckle, 1980 and 1977; Anderson and Gotzsche, 1984). Burry (1975) suggests that it is likely that physiotherapy is more important in the treatment of soft tissue sports injuries than in any other disease of the locomotor system.

The modalities most commonly mentioned in the research referred to above are R.I.C.E. (standing for rest, ice, compression and

elevation), exercise therapy and stretching exercises, ultrasound and occasionally shortwave diathermy and other heat modalities.

Mention is also made of other modalities which are effective in the treatment of acute muscle injuries, such as deep friction massage (Winter, 1968; Chamberlain, 1982; Cyriax, 1984) and variations within the scope of exercise therapy such as isokinetic rehabilitation (Oakes, 1981).

2.3.2. R.I.C.E. (rest, ice, compression and elevation)

RICE is the treatment of choice in the first 24 - 48 hours following trauma to muscle (Fitch and Gray, 1974; Millar, 1976; van Heerden, 1977; Chiapuzzo, 1979; Santilli et al. 1980; Oakes, 1981; Irving, 1989). However, only two studies were controlled (Laing et al. 1973; Wilkerson, 1985).

Rest is the most important treatment in acute soft tissue trauma according to Commandre (1983). Millar (1976) feels that rest is not indicated as this can lead to weakness in other muscle groups, can cause too tight a scar which takes long to stretch and severe cases may develop deformities such as "foot drop". Oakes (1981) stresses that rest should only apply to the injured part and suggests that the following principles be observed:

* adequate time must be allowed for recovery of tissue,

* a painfree muscle with full strength, power and extensibility must be obtained,
* cardiovascular fitness must be maintained.

Ice, used for acute soft tissue injury, has a deep local effect which causes vasoconstriction, which helps to control initial bleeding which limits the consequences of injury. It also offers a certain amount of pain relief for the patient for up to 2 hours after ice application (Laing et al. 1973).

Laing et al. (1973) outline what they believe to be the ideal treatment for a tear or haematoma of the quadriceps or hamstring groups of muscles, and strongly recommend ice application for no less than 20 minutes. This should then be followed by periods of compression bandaging (4-6 hours) and exercise in the form of walking initially and later more vigorous activity.

Pressure bandaging is of equal importance for the same reasons outlined above and should not be overlooked (Laing et al. 1973). Fluid which is allowed to fill interstitial spaces delays recovery and may even predispose to re-injury (Wilkerson, 1985). Wilkerson adds that control of oedema will effect the following:

(a) reduction of secondary hypoxic tissue damage
(b) better healing by first intention of opposing ends of torn tissue

(c) avoid the formation of necrotic tissue barrier around the injured tissue
(d) reducing pain and muscle spasm
(e) maintenance of joint function and mobility (in joint sprains).

Pressure bandaging and elevation of the part enhance venous return and increase "vascular suck" of the extracellular fluid thereby reducing oedema (Oakes, 1981).

2.3.3. Ultrasound

Dyson and Pond (1968) have shown ultrasound to be beneficial in various dosages in the healing of experimental wounds of rabbit ears. However, very few studies have been performed to test the efficacy of ultrasound. Only three studies could be found which used a controlled research technique (Dyson, 1976; Roche and West, 1984; Mc Diarmid and Burns, 1987) as opposed to personal experience (Oakley, 1982) or case reports (Fergusson, 1981).

The result is that little is known about the optimum treatment regimes for various conditions. It is left to the physiotherapist to study the available literature and adapt a carefully reviewed rationale for treatment for each case (Mc Diarmid and Burns, 1987).

It is believed that ultrasound can stimulate the release of histamine from the mast cells in the inflammatory phase of soft

tissue trauma, and it would be seen as pro-inflammatory in this regard; however it would also stimulate healing by bringing on the proliferative stage of healing (Dyson, 1987).

Dyson (1987) adds that ultrasound given in the proliferative phase of soft tissue healing is also beneficial as it accelerates repair by stimulating fibroblast activity which produce connective tissue, and the endothelial cells which allow for the formation of new blood vessels in the area. Whilst ultrasound facilitates scar contraction, no research has yet demonstrated the phenomenon known as "contracture" thought to be elicited by ultrasound.

Partridge (1987), like Dyson (1987) found that therapeutic ultrasound begun in the inflammatory phase results in strong elastic scar tissue.

Frequency and intensity settings in the treatment with ultrasound seem to be the most controversial issues debated in the literature: Scott (1975) suggests that 0.25 - 1 $W.cm^{-2}$ be used for acute pathology (0.25 $W.cm^{-2}$ to begin with) but that the depth of the injured area below the surface should be taken into account. Intensities up to 2 - 2.5 $W.cm^{-2}$ should be considered for deep seated lesions such as deep muscle tears.

Dyson (1987) reports research done by Hashish (1986) which has shown ultrasound intensities above 0.5 $W.cm^{-2}$ to be pro-inflammatory, but that this may be beneficial in the short term for

acute soft tissue trauma in that it will accelerate the transition to the remodelling phase.

2.3.4. Deep Transverse Friction Massage

Deep transverse friction massage is a technique first described by Cyriax (1984). The technique involves the application of therapeutic movement to musculo-skeletal structures over a small area (Chamberlain, 1982).

Very little research has been done on this modality but it has been shown to be effective in promoting the healing of soft tissue trauma (Chamberlain, 1982).

Cyriax (1984) found that friction massage, applied to muscle, allowed it the necessary painless broadening ability during contraction which passive stretching and active exercise could not achieve. The treatment is said to effect the following in muscle:

* traumatic hyperaemia which aids in pain relief,
* freedom of movement by breaking down fibrous adhesions around the lesion (Cyriax, 1984).

Cyriax and Chamberlain agreed on the following principles in technique which would ensure success in treatment:

* the muscle should be in a relaxed position

* application should be accurate, deep and across the fibres,
* the therapist's finger and the patient's skin should move as one,
* frequency and duration of treatment should vary with severity.

There is, however, no experimental evidence to back up these claims.

Loading of the muscle during treatment should be avoided (Winter, 1968; Cyriax, 1984) as this is painful and will put a stretch on the healing scar which is believed to be detrimental to the healing process. Millar (1976) suggests that avoiding loading the muscle from an early stage results in excessive scarring at the wound and may lead to reduced muscle tone and sometimes excessive weakness, ie. "dropped foot" from excessively weak tibialis anterior following gastrocnemius muscle tear.

2.3.5. Rehabilitative Exercise

This is a relatively well documented and accepted approach to the management of acute soft tissue injuries (Corrigan, 1967; Burry, 1975; Millar, 1976; Oakes, 1981; Noakes, 1986; Irving, 1989). Increasing emphasis is being placed on active rehabilitation in such management (van Heerden, 1977).

Millar (1976) employed an intensive rehabilitation regime on sports-persons with gastrocnemius strains and was able to return 68% of these people to the sports field within a week. The recurrence rate of injury was 1% of the total sample size of 400 patients. This success, he believes, could be attributed to the early commencement of rehabilitation ("those patients who presented within 48 hours experienced the shortest absence from sport") involving regular ice application, compression bandaging muscle strengthening and stretching exercises and electrotherapy modalities such as ultrasound, interferential and shortwave diathermy.

Pain free muscle with full power and extensibility are pre-requisites for returning to competitive sport after an acute muscle injury (Millar, 1976; Oakes, 1981). Oakes describes a rehabilitation program in detail which he suggests could be used for 2nd degree hamstring strains in the "remodelling" and "repair" phases of healing. The emphasis initially is on frequent stretching. Later (weeks 1-3) jogging (with an adequate warm-up) is advocated to maintain cardiovascular fitness. He stresses that no maximal loading of the muscle as would occur with sprinting and kicking, should be done whilst moving onto the next phase (weeks 3-4). These maximal loading activities should be phased in gradually, with pain being the most important guiding factor. This approach is also advocated by Irving (1989). Isokinetic testing of power and endurance is important in determining strength or endurance deficits in muscle (Oakes, 1981; Noakes, 1986). Burkett (1970) has

shown that weak hamstrings or an imbalance between the hamstring group and the quadriceps group of muscles of the same leg may increase the possibility of a hamstring lesion if such a weakness is not corrected.

However, we now know that this is not the main reason why two-joint muscles tear: it is the inability of the muscle, which is contracting eccentrically in decelerating the limb, to absorb the excessive amount of energy imposed on it (Garrett, 1990).

The emphasis therefore falls on the maintenance of muscle extensibility, endurance and power and adequate warm-up prior to exercising, a view which is supported by Pipes and Wilmore (1975) and Oakes (1981).

They have found isokinetic training to be a preferable method of rehabilitation following soft tissue injury. Following research done by Garrett (1990), however, there is a definite indication that the emphasis should be on eccentric muscle work to prepare the muscle for eccentric loading during exercise.

Anderson and Gotzsche (1984), in researching the effects of NSAIDs on soft tissue sports injuries, excluded the use of any form of rehabilitation from their treatment protocol. Muckle (1974, 1977 and 1980) also in testing NSAID efficacy, excluded any injuries from analysis which required any ultrasound or manipulation. He does, however, mention that the analgesic effects of the drugs

allowed for earlier employment of static muscle contractions which would help avert muscle atrophy. Muckle (1974) stresses that muscle strength, power and extensibility should be regained prior to the injured sports-person returning to the sports field.

CHAPTER 3

METHODOLOGY

3.1 RATIONALE

It is obvious from the foregoing literature that there is a definite need for objective research into the use of NSAIDs in the treatment of acute soft tissue sports injuries. Some useful research has been done on animals (Almekinders and Gilbert, 1986) but this needs to be backed up by equally useful research on man.

After consulting Professor T.D. Noakes of the Physiology Department at the University of Cape Town, and later Warner Lambert Parke Davis pharmaceutical company, it was decided that a study should be done to investigate the possibility of such a research project.

In October 1986 a research protocol was established for a double blind study to investigate the effects of NSAIDs, in combination with physiotherapy treatment, on the healing of acute muscle injuries of the thigh. The study was to be conducted in two centres, namely: No's 1 and 2 Military Hospitals in

Voortrekkerhoogte and Wynberg respectively. Military patients were selected because of their availability and reliability of attendance.

The use of Cybex isokinetic equipment to test muscle performance was deemed essential to ensure objective assessment of the effects of treatment. This is the first time such accurate measures have been used to assess muscle performance in testing this medication. Pain and swelling assessments were included in the assessment as NSAIDs are said to have analgesic and anti-inflammatory properties.

The sequence of events following injury and referral to the study would be as follows:

1. Subjective assessment and screening for inclusion and exclusion criteria,
2. Objective assessment including isokinetic muscle function tests, pain and swelling to be done on days 1, 3 and 7 after the injury
3. Physiotherapy treatment for seven consecutive days

3.2 SUBJECT SELECTION

Patients were referred for selection to this study by Defence Force medical officers and General Practitioners. They were assessed initially by a doctor for suitability using the

inclusion and exclusion criteria which were laid down in the research proposal (see 3.2.1. (a) & (b)). If they were found to be unsuitable, appropriate liaison with the referring doctor ensured that the patient received other appropriate treatment. Patients found to be suitable had the study objectives and implications explained to them, after which they were asked to sign a consent form, stating their intent to comply with the prescribed protocol. These patients were then admitted to the study.

3.2.1 Inclusion and exclusion criteria

(a) Inclusion Criteria

(i) Males or females from the ages of 15 to 60. Patients under the age of 18 required parent's written consent before being admitted to the study.

(ii) The patients were to have suffered acute muscle injuries of either the quadriceps femoris (including either rectus femoris, vastus medialis, vastus lateralis or vastus intermedius or a combination of these) or hamstring muscles (including biceps femoris, semi-tendinosis or semi-membranosis or a combination of these)

(iii) The injury was to have been sustained no more than 48 hours prior to the first assessment

(iv) The patient had to have signed the consent form (Appendix 1)

(b) Exclusion Criteria

(i) The use of any other drugs such as analgesics, anti-inflammatory agents (including oral medication, suppositories or gels), cortico-steroids, topical-rubifacients or anti-coagulants,

(ii) Hypersensitivity to aspirin or NSAIDs

(iii) Significant diseases - including a history of peptic ulceration, haematologic or haemopoietic disease, asthma or bronchospasm.

(iv) No competitive sport to be undertaken during the study.

(v) Any other associated injury to the thigh or knee of either leg.

Provision was made for patients to withdraw from the study for the following reasons:

(i) voluntary withdrawal

(ii) protocol violation

(iii) drug intolerance

(iv) serious illness.

3.3 EXPERIMENTAL PROCEDURES

3.3.1 Pain Testing

(a) Introduction

A visual analogue scale was selected to assess the patient's pain, as this scale has been shown to be superior to other such tests (Scott and Huskisson, 1976; Liggins, 1989). In particular this technique of pain assessment, referred to as the numeric rating scale by Liggins (1989), is more accurate than the simple descriptive pain scales which have been used in the past (Liggins, 1989).

The vertical visual analogue scale (or numeric rating scale) was selected for this study with the degree of severity descending in intensity from 10 to 0. A score of 10 represented unbearable pain and a score of 0 represented no pain.

Patients were asked to assess their pain in the five ways indicated below. In order to obtain an accurate indication of the patient's pain, five scales were used instead of one.

(b) Implementation

Pain was assessed under the following headings on 5 different visual analogue scales:

1. Pain experienced in the previous 24 hour period.
2. Pain on movement. The patient was positioned on his side to eliminate gravity and was asked to flex and extend the knee through the available range of movement.
3. Pain on walking 10 metres (recorded as 10 if not able to do so).
4. Pain on running 10 metres (recorded as 10 if not able to do so).
5. Pain on palpation of the affected area.

(c) Data collection

Each patient completed 5 visual analogue scales on days 1,3 and 7 of the study. The patient's scores were added together for each day and recorded. The result was that three total values were recorded for each patient during the study, one for each assessment day.

A total pain score was calculated for each assessment day in each group. Median values were then obtained.

3.3.2 Swelling measurement

(a) Introduction

Swelling is commonly assessed in most studies researching the effects of NSAID medication. This is done by assigning values to the degree of swelling, for example where swelling is assessed as mild, moderate or severe, the numeric values 1, 2 and 3 will be assigned respectively (Corrigan, 1967; Huskisson et al. 1973; Fitch and Gray, 1974; Krishnan, 1977; Williams and Engler, 1977; Bouchier-Hayes and Jones, 1979; Chiapuzzo, 1979; Abbott et al. 1980; Commandre, 1983; Mann, 1983; Edwards et al. 1984; Duncan and Farr, 1988).

This method is open to subjectivity on the part of the observer. It was decided therefore that an objective measure should be used to determine the degree of swelling.

(b) Design and measurement procedure

Swelling was measured using a plastic tape measure graded in centimetres and millimetres. Three measurements were taken of each leg with the patient positioned in prone lying for hamstring injuries and in supine lying for quadriceps injuries. The site of maximum pain was determined by palpation of the affected leg. The distance from this circumferential measurement to the superior pole

of the patella (in the case of quadriceps injuries), and the popliteal crease (in the case of hamstring injuries), was recorded. This was done so that:

(i) measurements could be taken at the same sites during subsequent visits and
(ii) a measurement at the similar anatomical site on the opposite leg could be taken for comparison.

(c) Data Collection

Three measurements were taken of the affected and unaffected legs at the site of injury and the corresponding site on the unaffected leg respectively. A mean was calculated from these three readings for each leg on each assessment day. A ratio was then calculated for each assessment day by dividing the mean value for the affected leg by the mean value for the unaffected leg.

3.3.3 Cybex II Isokinetic Muscle Test

(a) Introduction

Isokinetic testing using a Cybex II dynamometer and data reduction computer provides an accurate measure of isokinetic muscle performance (Oakes 1981).

In researching the literature available on the efficacy of NSAIDs it is noted that objectivity is lacking in experimental procedure. One of the principal aims of this study was to determine objectively the effects of NSAIDs on the healing of muscle injuries by measuring the rate and extent of recovery of isokinetic muscle strength and endurance and assessing the rate of pain and swelling reduction.

The Cybex II Data Reduction computer provides us with accurate measurements and readings of isokinetic muscle performance in terms of power and endurance. The machine accurately measures torque production at a given speed by the patient. By comparing these different torque values produced by each leg, accurate deficiencies in muscle power and endurance can be determined.

(b) Positioning of Patients

For the Cybex test, the patient was positioned in sitting with hips and knees flexed to 90^0. The axis of rotation of the lever arm of the Cybex machine was positioned opposite the centre of the knee joint, which is opposite the medial femoral condyle. The distal end of the lever arm was secured to the patient via a shin-pad placed just proximal to the malleoli. Thigh and shin-pad-straps were tightened within comfortable limits to eliminate unwanted movement, for example hip extension, and to ensure that the lower leg and the lever arm of the Cybex machine moved as one. The unaffected leg was always tested first and practice runs of 5

repetitions were allowed to enable the patient to become accustomed to isokinetic exercise. The power test was always performed first on each leg. Quadriceps and hamstrings power was tested during 5 reciprocal contractions using a speed of $60^{o}.sec^{-1}$. Data were measured as peak torque and expressed in Newton metres.

Quadriceps and hamstring endurance was assessed during 25 reciprocal contractions at a speed of $240^{o}.sec^{-1}$. Endurance was measured and expressed in 3 different ways, namely:

(i) Total work, performed during 25 contractions and expressed in Joules.

(ii) Torque acceleration energy which is a measure of the energy expended in the first 0.125 ms of torque production. This was expressed in Joules.

(iii) Average power which is the total work produced in the 25 contractions, divided by the actual contraction time. Average power was expressed in Watts.

Patients were instructed to do the following:

1. Work maximally during all testing.
2. The lower leg must move through the maximum available range of movement.
3. Fold arms across chest throughout testing.

Testing was always done before treatment was given. However, pain and swelling measurements were done prior to Cybex testing.

(d) Data Collection

Both legs were tested on each of the three assessment days. The Cybex Data Reduction Computer gave a print-out of each test. Measurements of peak torque, torque acceleration energy, average power and total work were listed and recorded on the patient assessment form (Appendix 1).

A ratio was obtained in each of these testing categories, for each patient on each assessment day. This was done by dividing the value obtained in each category for the affected leg by that obtained for the unaffected leg. Therefore in each testing category, a ratio was calculated for each patient for each assessment day.

3.4. DRUG ADMINISTRATION

3.4.1. Randomization

Patients admitted to the study were randomly allocated to one of three groups, A, B or C. The random code was set up by Warner Lambert/Parke Davis in Wales, (UK), who also packed and supplied the drugs and placebos.

The random code was held by Warner Lambert (SA) Pty Ltd and could only be opened in an emergency by order of a doctor, for example, in case of a possible drug intolerance. This method ensured that the study was performed using a double-blind technique.

3.4.2 Drug Dosage and Package

Meclofenamate was packed in white capsules, each capsule containing 50mg sodium meclofenamate. The diclofenac was packed in gray capsules each capsule containing 25mg diclofenac sodium. Half the placebo capsules were white and half were gray.

Diclofenac sodium in the 25mg dosage is usually marketed in tablet form. As a result, experimentation had to be done for this study to determine whether crushed tablets placed into capsules would be safe and as effective as the capsule format. This experimentation was done by Warner Lambert in Milan, Italy, and they found that the capsule format was sufficiently effective. The tablets were therefore crushed and placed into capsules for this study (see Appendix 7).

Each patient received a small box containing two bottles of capsules. The label on the box instructed the patient to take two capsules from each bottle 3 times a day, with meals. The bottles, therefore, each contained 42 capsules sufficient to last the patient for seven days. Patients in group A received meclofenamate capsules and grey diclofenac placebo capsules. Patients in group B

received diclofenac capsules and white meclofenamate placebo capsules. Patients in group C received white meclofenamate placebo capsules and grey diclofenac placebo capsules. This method of administration was necessitated by the fact that the capsules were of a different colour.

Patients were assessed on days 3 and 7 to determine whether any side-effects had developed. No leading questions were posed. If a patient had experienced what he or she thought were side effects, he or she was examined by the doctor to decide on the course of action to be taken. The doctor also decided whether the side effect experienced could be related to either meclofenamate or diclofenac.

3.5. PHYSIOTHERAPY TREATMENT

3.5.1 Introduction

All patients received the same physiotherapy treatment on all seven days of the study. This treatment commenced after assessment on day 1 and stopped when the patient was fully recovered. The treatment used was described in the research proposal which was drawn up before the study commenced. As this was a multi-centre study, physiotherapists at the various centres were shown exactly what treatment to give. In this way, all patients received the same treatment.

3.5.2 Rest, Ice, Compression and Elevation (R.I.C.E)

This form of treatment is widely used and generally advocated in the management of acute soft tissue injuries (Corrigan, 1967; van Heerden, 1977; Chiapuzzo, 1979; Santilli et al. 1980; Oakes, 1981; Irving, 1989).

Patients were instructed to rest from all sporting activity for 48 hours after the injury. In addition, no competitive sport was allowed during the remainder of the seven day study period.

Ice packs, which could include cryogel packs or ice cubes (whole or crushed ice) in a damp towel, were applied for 20 minutes over the injured area which was determined by palpation by the physiotherapist at the first visit. This was done as often as was possible in the first 48 hours. Elastic compression bandages were provided to each patient and were to be worn continually for the first 48 hours after the injury. The bandage was applied in double layers and extended from the groin to below the knee.

The patient was instructed to keep the limb raised on a stool when sitting during the 48 hour period after injury, and encouraged to do this as often as possible.

3.5.3 Deep Transverse Friction Massage (Friction massage)

Friction massage (Cyriax, 1984) was given on alternate days starting 48 hours after the injury. This was done for 10 minutes each session. The muscle tear was found by palpation and the friction massage applied as vigorously as the patient would allow.

3.5.4 Ultrasound

Continuous ultrasound therapy was given every day starting 48 hours after injury. Care was taken to omit areas where a haematoma might be present.

A dosage of $1W.cm^{-2}$ was given for 5 minutes over the affected area as determined by palpation. A 1.0 MHz sound head was used on all machines and, where possible, the same machine was used in each centre in an attempt to standardize the treatment.

3.5.5 Rehabilitative exercise

This started on day one with passive stretching techniques only, which were done every day of the trial. All stretching was controlled/overseen by the physiotherapist.

(a) Quadriceps: The patient was positioned in prone lying on a flat examination couch. The knee of the affected leg was passively flexed until discomfort was felt. The physiotherapist

then instructed the patient to relax; after having felt the relaxation, the patient then flexed a little more and held the stretch for 10 seconds, and then relaxed the stretch. This was done 10 times at each treatment session for 7 days.

(b) Hamstrings: The patient was positioned in a supine lying position on a flat examination couch. The affected leg was flexed at the hip, keeping the knee straight and the ankle in dorsiflexion, until the patient experienced discomfort. The patient was then instructed to relax and on feeling this, the therapist increased the stretch slightly and held it for 10 seconds before relaxing. This was repeated 10 times at each treatment session for 7 days.

Rehabilitative exercise was introduced 48 hours after the injury occurred and included the following:

(1) Isometric exercises:

This exercise involved tightening the hamstring muscles, holding for 10 seconds and then relaxing for 10 seconds; then tightening the quadriceps muscles for 10 seconds and then relaxing for 10 seconds. This was repeated 10 times at each treatment session for the remaining days of the study.

(2) Aerobic exercise

Patients were encouraged to start aerobic sport, for example swimming or running 3 days after injury. They were instructed to stop such activity if they experienced discomfort in the injured muscle. No competitive sport was allowed at any stage during the seven day study.

3.6. STATISTICAL METHODS

All analysis was done using the analysis-of-variance test. The acceptance level used was where $p<0.05$.

In the event of there being a large variation in day 1 values, the transformation formula described by Cox (1958) was used to correct for this. Therefore, instead of using ratio values as described above, we use the following:

$$\frac{100}{1} \times \frac{\text{affected leg value - unaffected leg value}}{\text{unaffected leg value}} = x$$

$$\log \left[\frac{x + 0.5}{100.5 - x} \right] = y$$

Mean values were then calculated for these y-values in each assessment and plotted on the y-axis on the graph.

In the study by Reynolds (1987), it was found that injuries to the quadriceps and hamstring groups were not very severe. When it was

discovered that this was also the trend in this study it was decided to separate the severe injuries from the non-severe injuries for purposes of a second analysis.

(a) The groups were analyzed to assess whether the degree of severity was evenly distributed throughout the three groups in their respective sub-groups. This was done by applying the two-way analysis-of-variance test using injury severity as a co-factor.

(b) The data were stratified in terms of severity levels and statistical analysis was done using the one-way analysis of variance test for each treatment group.

The acceptance level $p<0.05$ was used in both tests mentioned above.

CHAPTER 4

EXPERIMENTAL RESULTS

4.1 SAMPLE

Between 1 January 1987 and 1 June 1989, 75 patients were admitted to this study. Of these, 15 were excluded for protocol violation or non-compliance. Of the 60 patients who completed the study, 21 patients received meclofenamate, 19 diclofenac and 20 placebo, according to the random code which was held at the Warner Lambert (SA) head office in Tokai, Cape Town.

Of the 60 patients who completed the study, 9 were seen in Pretoria at No 1 Military Hospital and 51 were seen in Cape Town at the No 2 Military Hospital.

There were 13 hamstring injuries and 8 quadriceps injuries in the meclofenamate group, 17 hamstring and 2 quadriceps injuries in the diclofenac group and 14 hamstring and 6 quadriceps injuries in the

placebo group (see Table 4.1).

TABLE 4.1 TABLE OF PATIENT AND INJURY DISTRIBUTION

MEDICATION	PATIENTS	INJURY	
		HAMSTRING	QUADRICEPS
meclofenamate	21	13	8
diclofenac	19	17	2
placebo	20	14	6

TABLE 4.2. HEIGHT, WEIGHT, INJURY SEVERITY, AGE AND SEX DISTRIBUTION IN EACH GROUP

	MECLOFENAMATE	DICLOFENAC	PLACEBO
WEIGHT (kg)	79.6 ±11.9	79.1 ±11.2	78.1 ±8.0
HEIGHT (cm)	179.2 ±7.7	176.0 ±9.2	179.8 ±6.5
INJURY SEV.*	1.9 ±0.6	1.9 ±0.7	1.8 ±0.6
AGE (years)	29.5 ±10.0	31.3 ±9.6	28.2 ±7.8
SEX MALE	21	18	20
FEMALE	0	1	0

* KEY: mild injuries = 1; moderate injuries = 2; severe injuries = 3. Data presented as mean and standard deviation.

There was only one female patient admitted to the study and she received diclofenac. The average weights and heights of the patients were very similar, as were their ages and the severity of their injuries (Table 4.2).

The number of quadriceps injuries was not evenly distributed between the groups (see Table 4.1). It would be pointless to draw

conclusions from data where there were only 2 patients in one of the groups. Accordingly it was decided that only hamstring injuries would be assessed in this study and all data referred to hereinafter pertains only to these injuries.

4.2 ADVERSE EVENTS

A total of 13 out of 44 patients, or 28.6% of the total number of patients who sustained hamstring injuries encountered an adverse event during the study period. None of these adverse events warranted any reduction or alteration in medication, or any withdrawals from the study. The adverse events are described in Table 4.3.

TABLE 4.3. ADVERSE EVENTS ENCOUNTERED BY PATIENTS WHO SUSTAINED HAMSTRING INJURIES

ADVERSE EVENTS	MECLOFENEMATE (n=13)	DICLOFENAC (n=14)	PLACEBO (n=17)
stomach cramps	1	1	0
drowsiness	2	3	1
diarrhoea	1	1	0
headache	0	1	0
dry mouth	1	0	0
incr. frequency of stools	0	0	1
TOTAL	5	6	2

It is important to note that the frequency of adverse symptoms was more than 100% higher in the treatment groups compared to the placebo group.

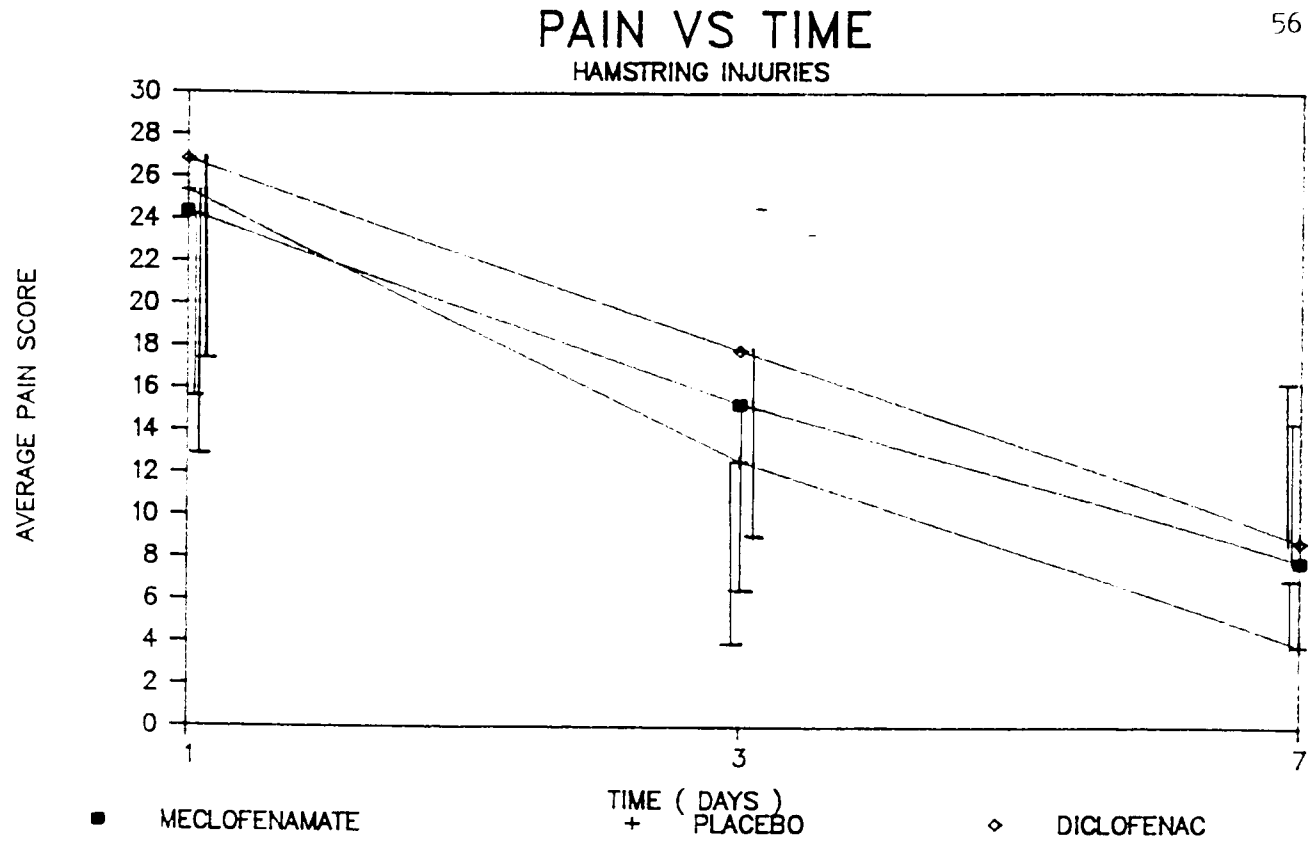


Figure 4.1.

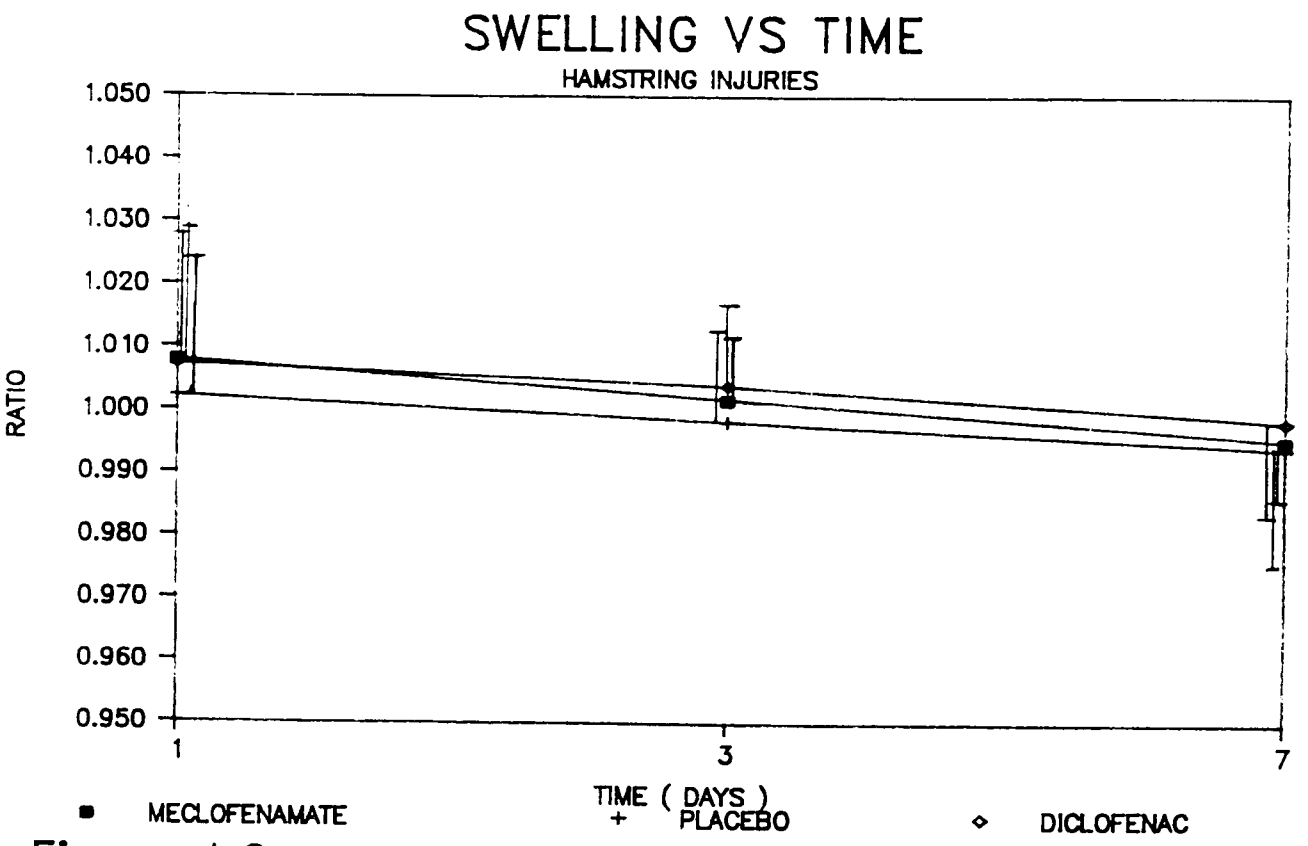


Figure 4.2.

4.3. PAIN TEST

The line graphs drawn from the median values obtained for pain in each group are shown in Figure 4.1. There were no significant differences between any of the three groups. All groups showed a steady reduction in pain over the 7 days.

4.4. SWELLING

No significant differences could be found between the three groups in the swelling assessment (see Figure 4.2).

It is immediately apparent from Figure 4.2 that the value for the placebo group on day 1 varies from the two drug group values on that day. The slopes of the curves on the graph are much the same throughout the remaining days. In order to correct for this difference at day 1, the transformation formula of Cox (1958) was employed as described previously.

A graph of swelling was then drawn using this transformation. Again, no significant differences could be found between the groups.

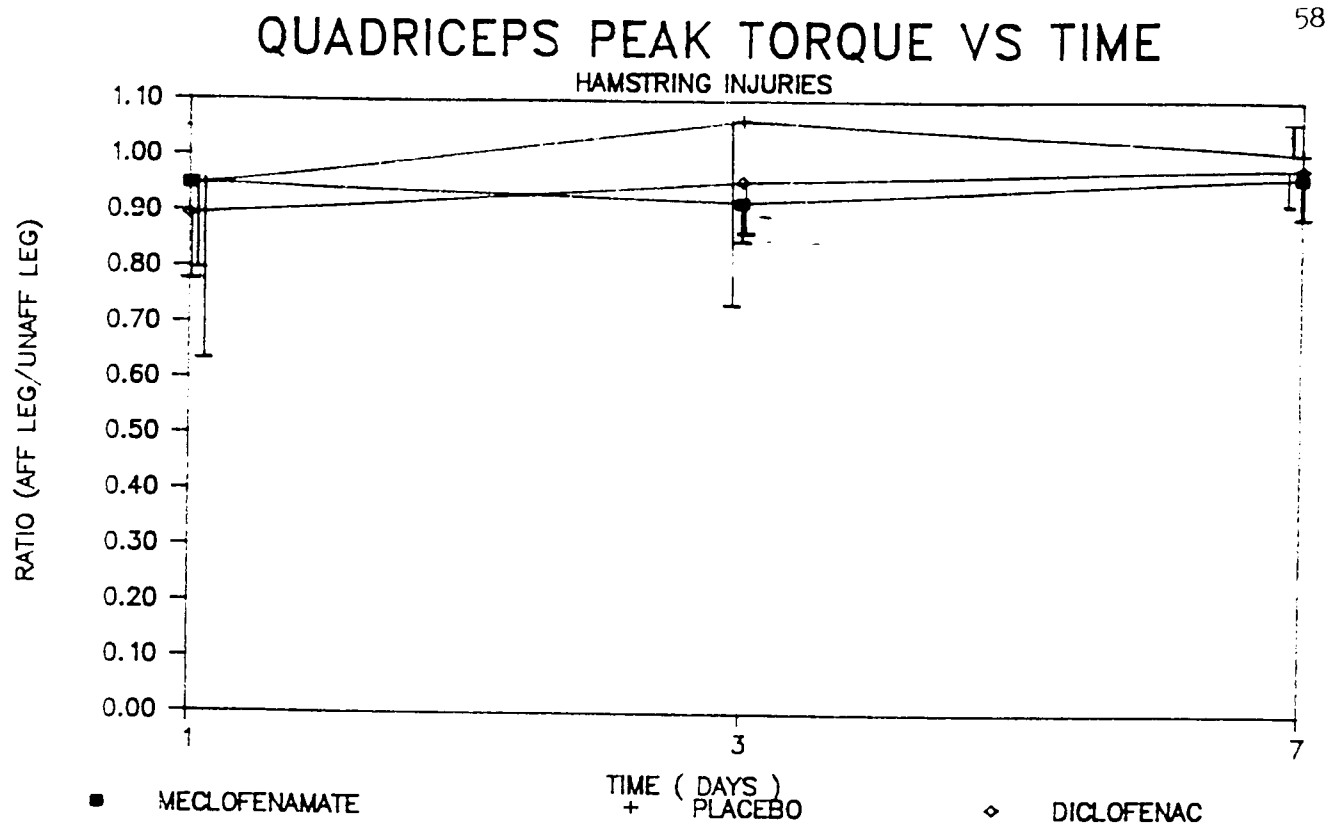


Figure 4.3.

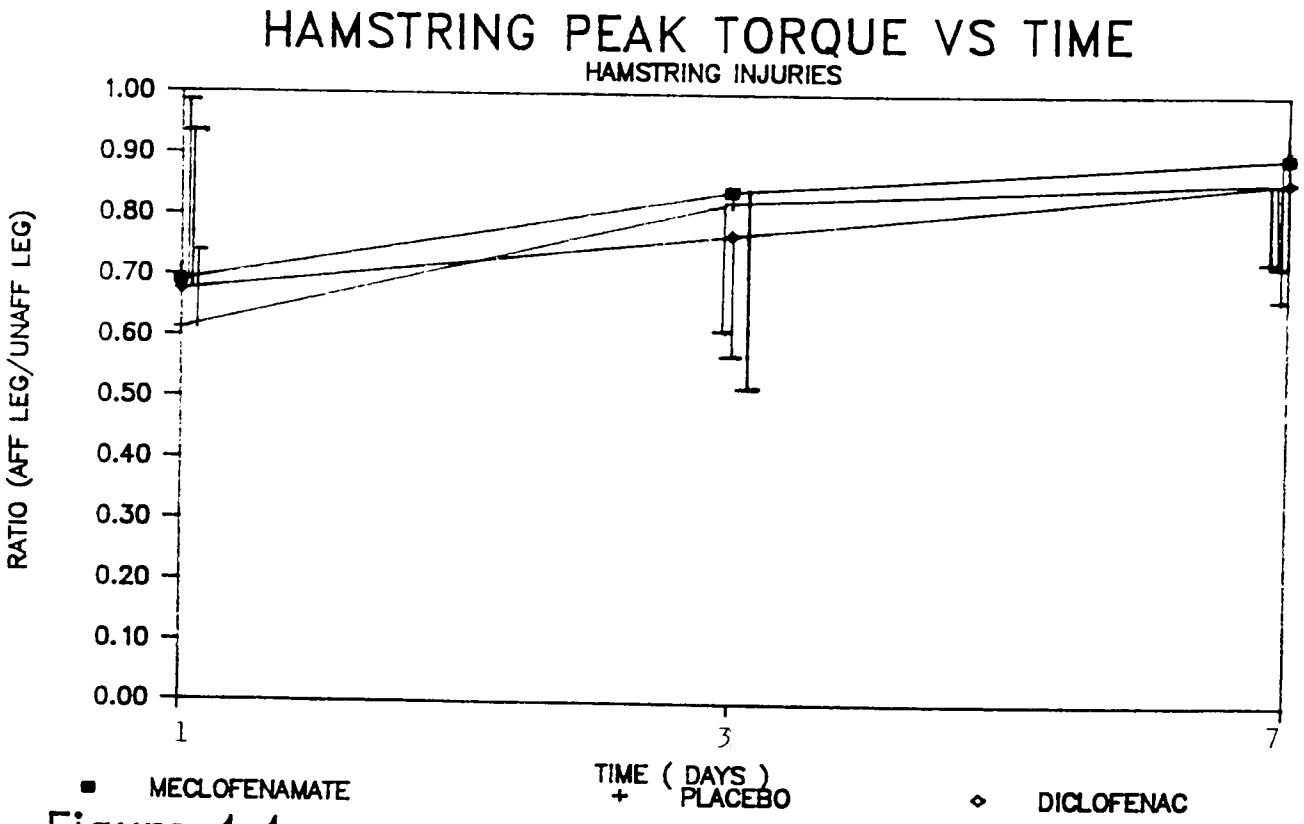


Figure 4.4.

4.5. MUSCLE PERFORMANCE TEST

4.5.1. Power test

(a) Quadriceps (peak torque)

Figure 4.3 shows the graph of quadriceps peak torque. No significant differences were shown between the three groups ($p<0.05$).

The starting positions of the three curves at day one differ widely and this was corrected for using the transformation formula described in 3.6 above. Again no significant differences between the three groups ($p<0.05$).

(b) Hamstrings (peak torque)

The graph of hamstring peak torque was analyzed (see Figure 4.4) and no significant differences could be shown between the three groups ($p<0.05$).

The discrepancy in initial values was corrected for using the transformation described in 3.6 above, and statistical analysis of this data showed no significant differences ($p<0.05$).

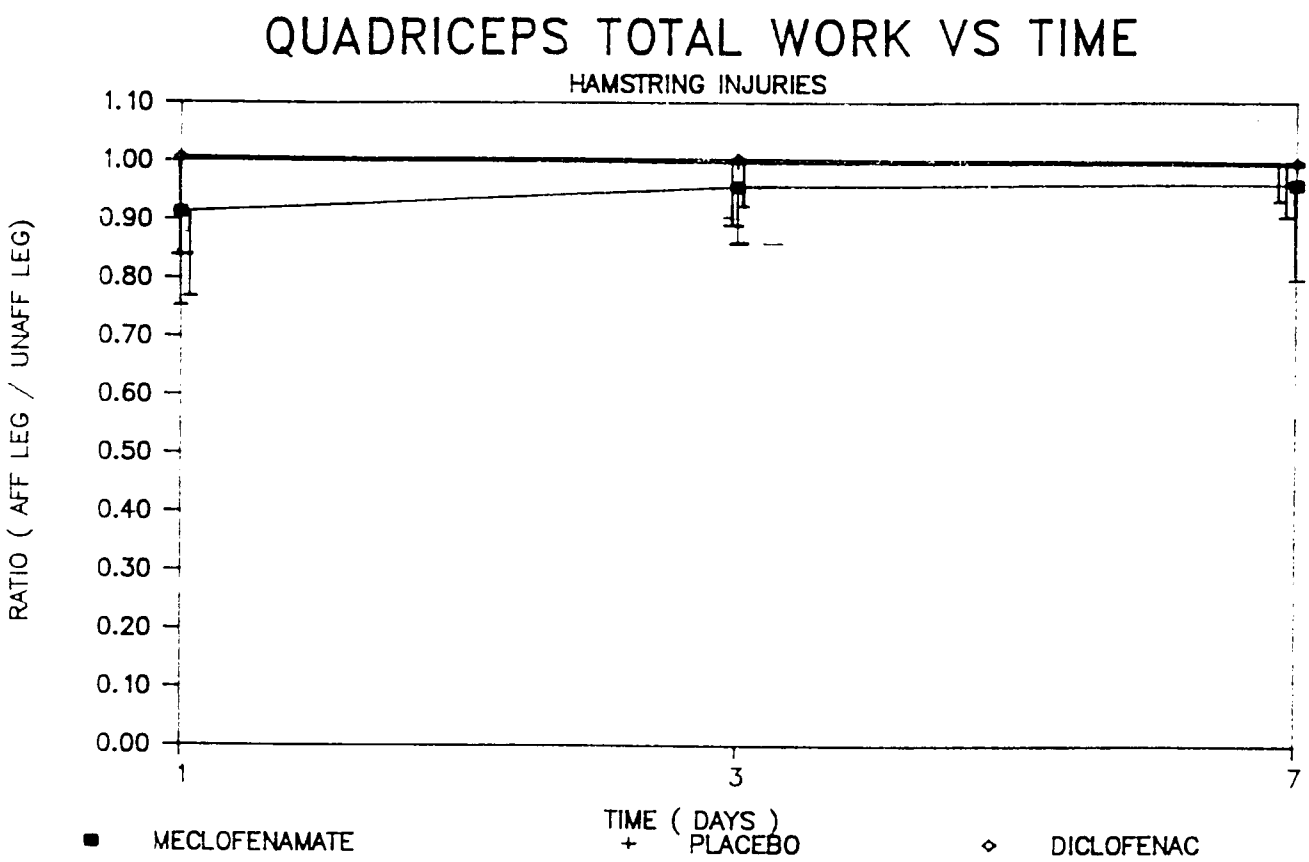


Figure 4.5.

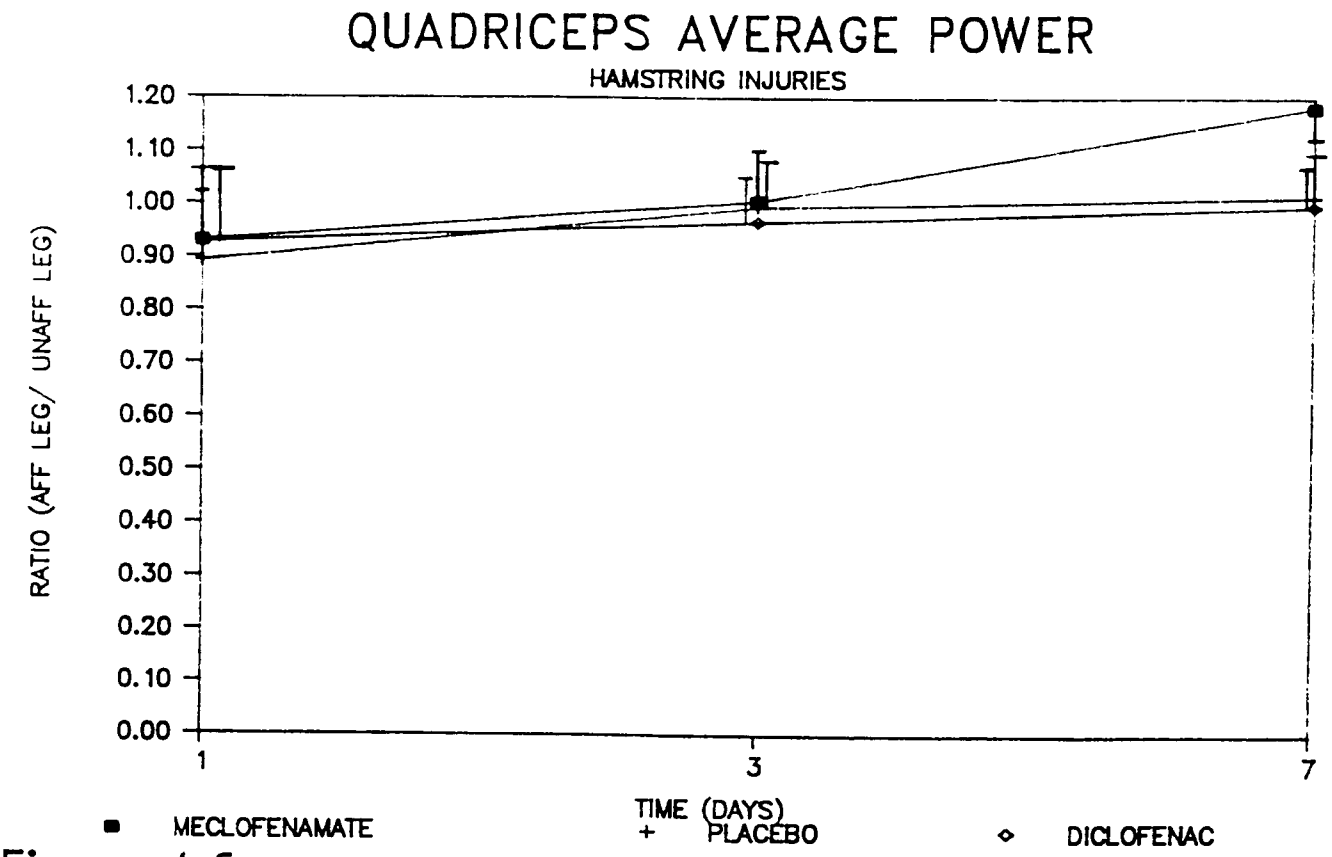


Figure 4.6.

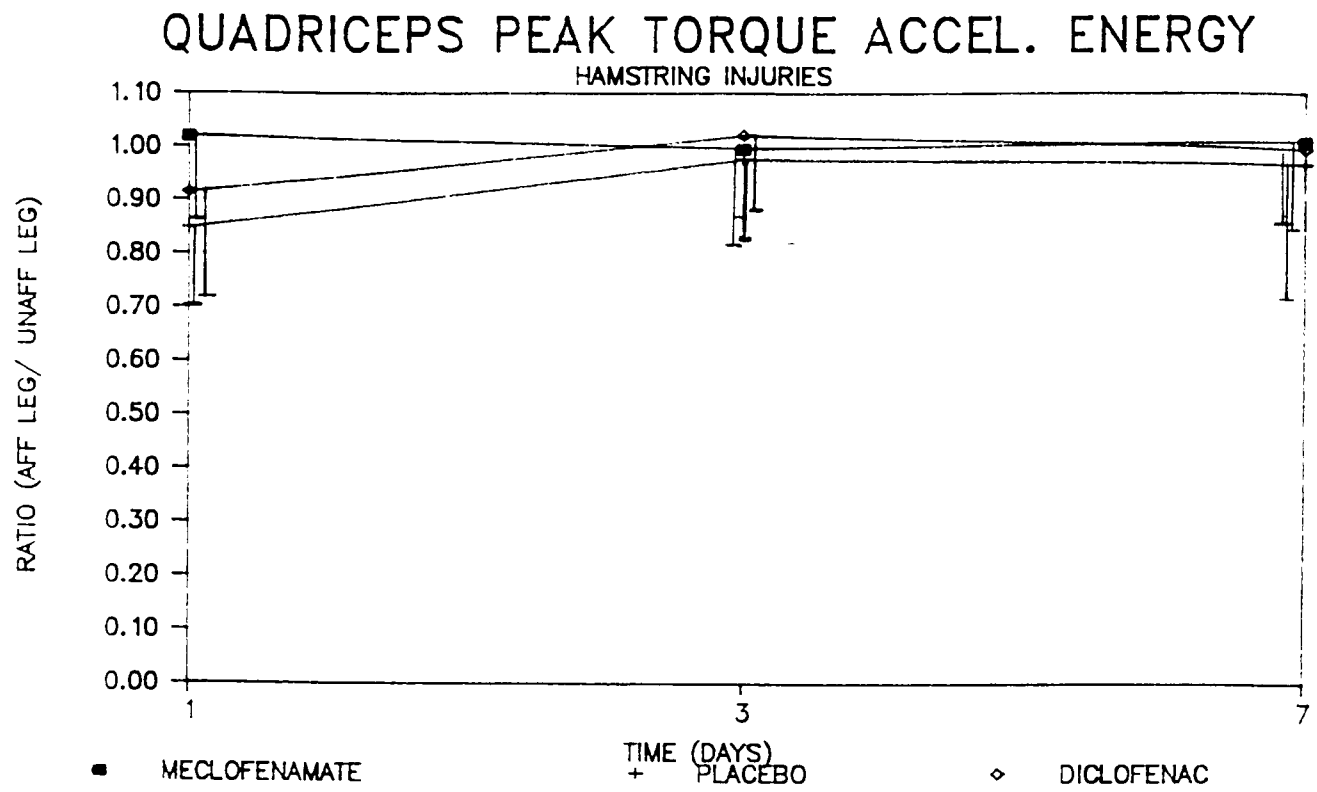


Figure 4.7.

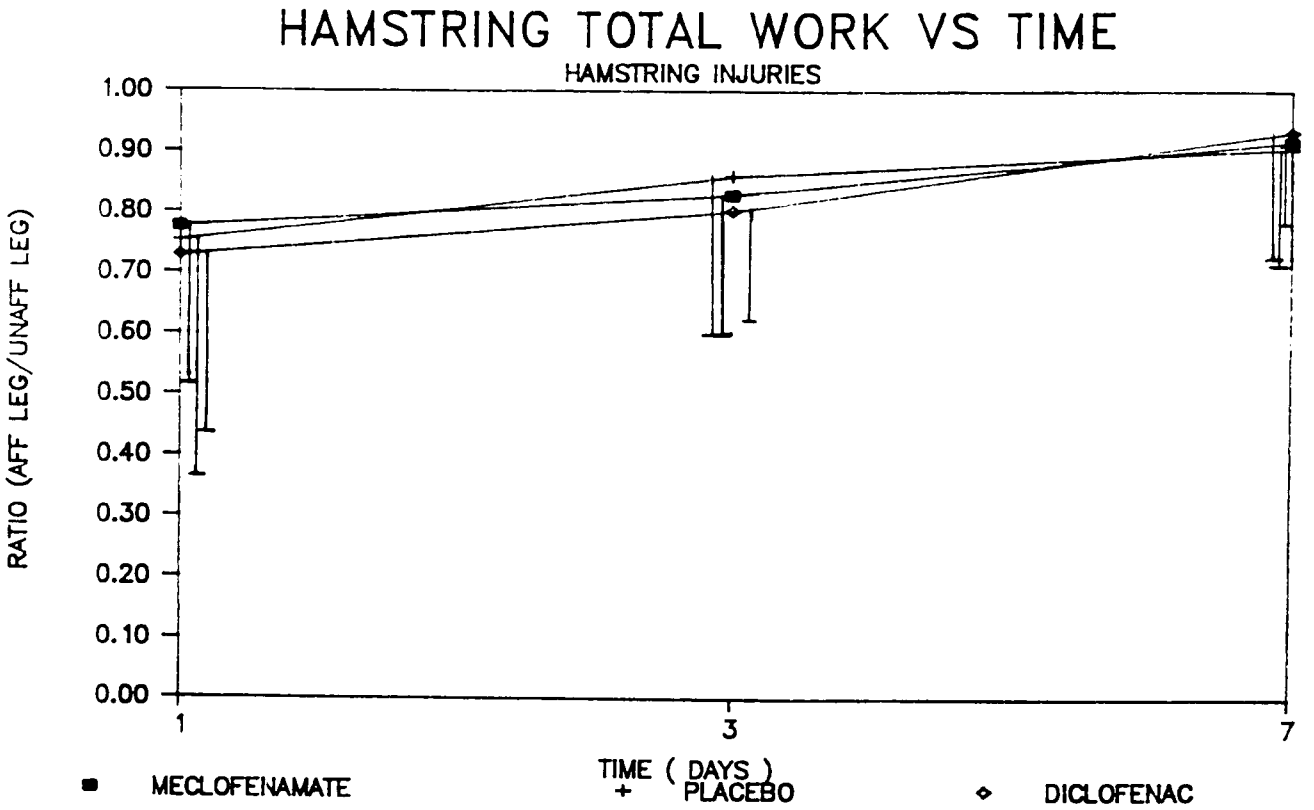


Figure.4.8.

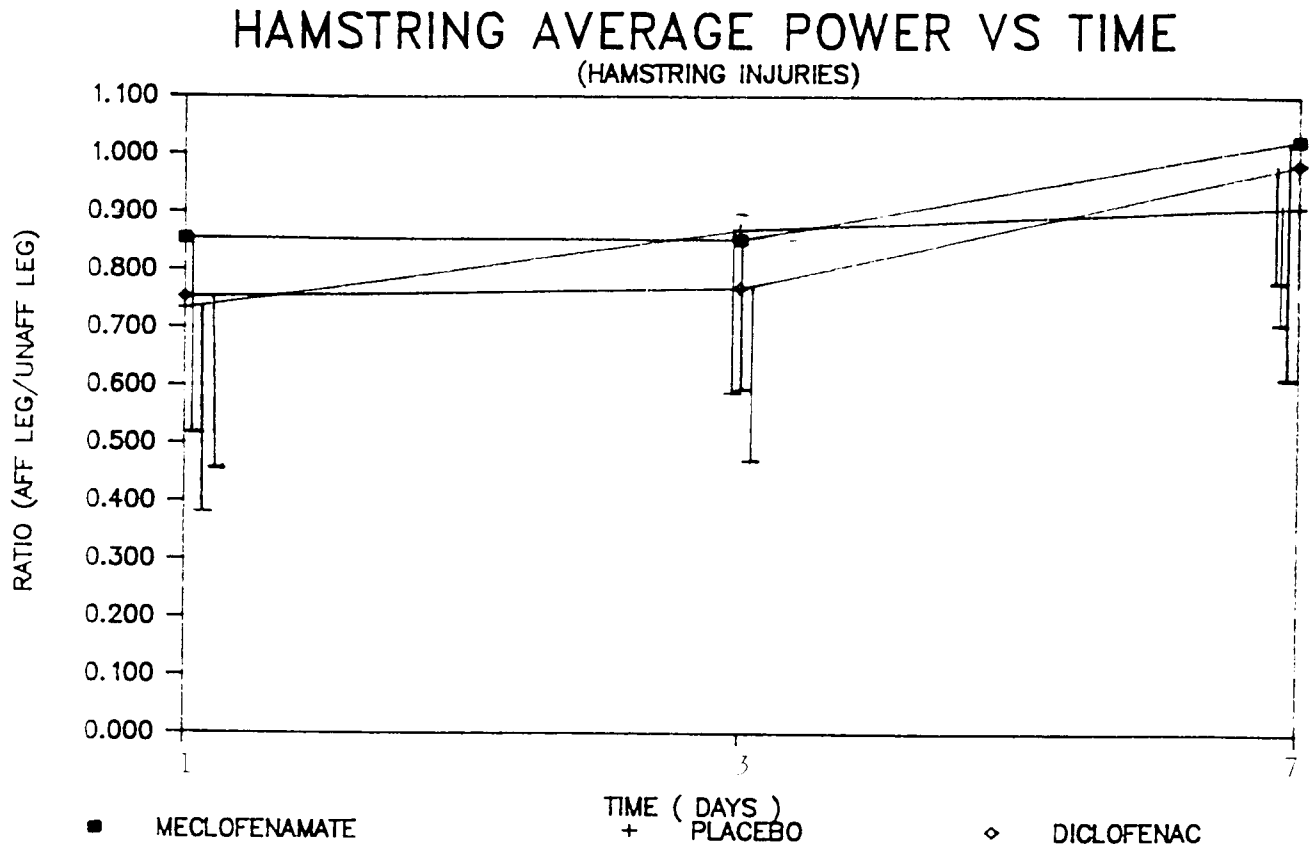


Figure 4.9.

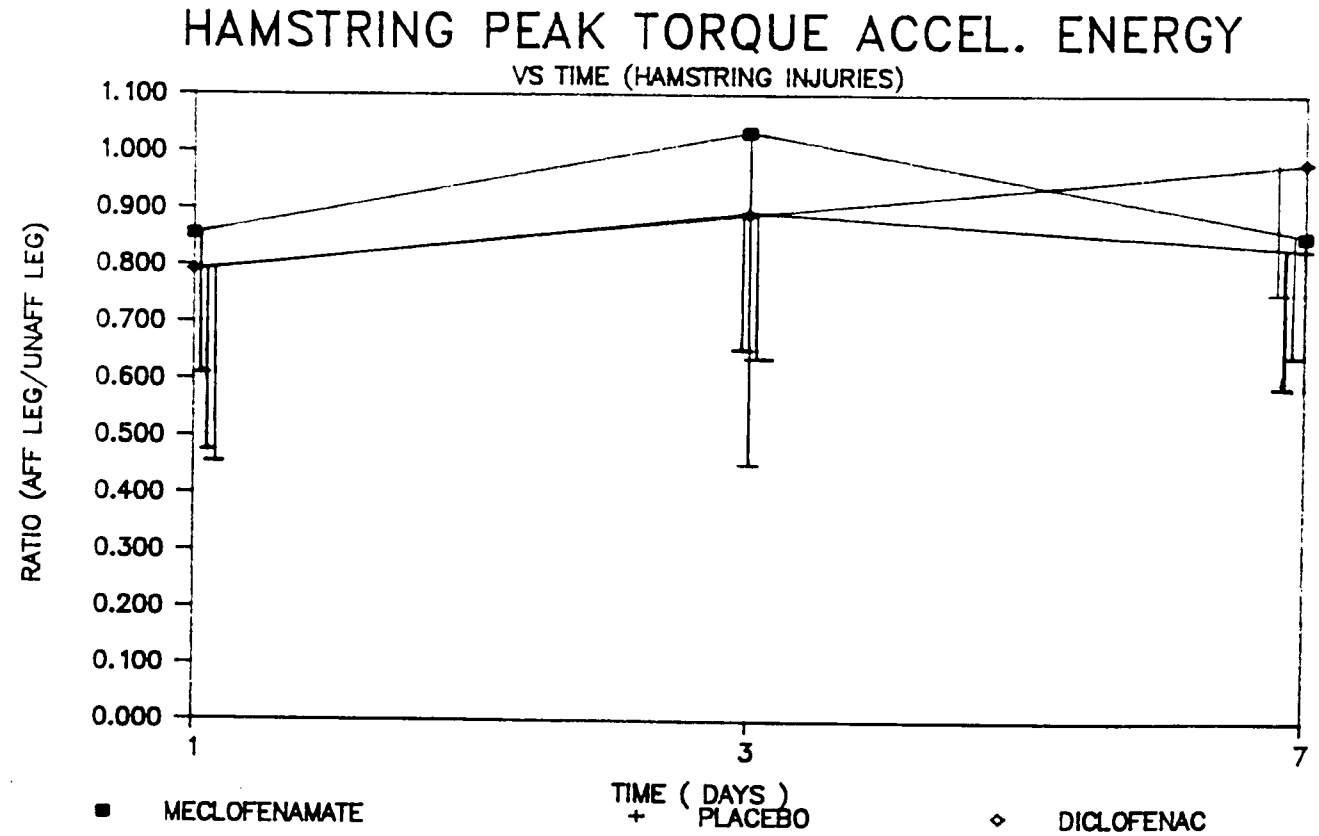


Figure 4.10.

4.5.2. Endurance test

(a) Quadriceps endurance (Total work, average power and peak torque acceleration energy.)

The graphs drawn of quadriceps total work, average power and peak torque acceleration energy were analyzed (see Figures 4.5, 4.6 and 4.7) and statistical analysis showed no significant differences between the three groups ($p<0.05$).

The transformation formula described in 3.6 above was used again to correct for starting point discrepancies on day 1. Statistical analysis of the data again showed no significant differences between the three groups ($p<0.05$).

(b) Hamstring endurance (total work, average power and peak torque acceleration energy).

The graphs of hamstring total work, average power and peak torque acceleration energy were analyzed (see Figures 4.8, 4.9 and 4.10) and statistical analysis of these data showed there were no significant differences between the three groups ($p<0.05$).

The transformation formula mentioned earlier was used to correct for the wide range of day 1 values and these data were analyzed statistically and no significant differences could be shown between the three groups ($p<0.05$).

4.5.3. Severe injury analysis

In view of the fact that there were no differences found between any of the groups in the above analyses, it was decided to analyze the severe injuries apart from the non-severe injuries at the risk of dealing with smaller sample sizes. It was hoped that this may indicate the true effect of these drugs, in combination with physiotherapy treatment, on the healing of acute, severe hamstring injuries. Van Marion (1973) used a similar technique to eliminate mild to moderate injuries but could find no significant differences between indomethacin and placebo.

Injury severity was determined in two ways in this study:

(a) Patients were grouped according to their injury severity determined at the initial visit. The injury was subjectively assessed as being either mild, moderate or severe and assigned the values 1, 2 or 3 respectively. Analysis was done using the two-way analysis-of-variance test ($p<0.05$).

(b) Patients were grouped according to objective injury severity criteria as follows:

* hamstring peak torque at day 1 should be less than 60% of the normal leg. This test was selected for this criteria as the high resistance of the test makes it the most

difficult test to perform after an acute muscle injury

* the total pain value at day 1 should be greater than 25, that is, giving an average greater than 5 out of 10.
* the injury severity at day 1 should be equal to or greater than 2.

After applying these limitations, two objectively determined sub-groups for injury severity were obtained. In the severe-injury sub-group there were 6 patients in the meclofenamate group, 5 in the diclofenac group and 6 in the placebo group. In the non-severe-injury sub-group there were 7 patients in the meclofenamate group, 9 patients in the placebo group and 11 in the diclofenac group. Graphs were drawn in the same way as before and statistical analysis was done as described in 3.6 above.

(i) Subjective injury-severity analysis

No significant differences could be found in this analysis and therefore there were no drug/severity interactions between any of the groups. From this we know that the random code used to split patients into the three treatment groups was an effective randomization.

(ii) Objective severity comparative analysis

A significant difference was found between the meclofenamate and placebo groups in the severe-injury sub-group ($p<0.05$): the placebo

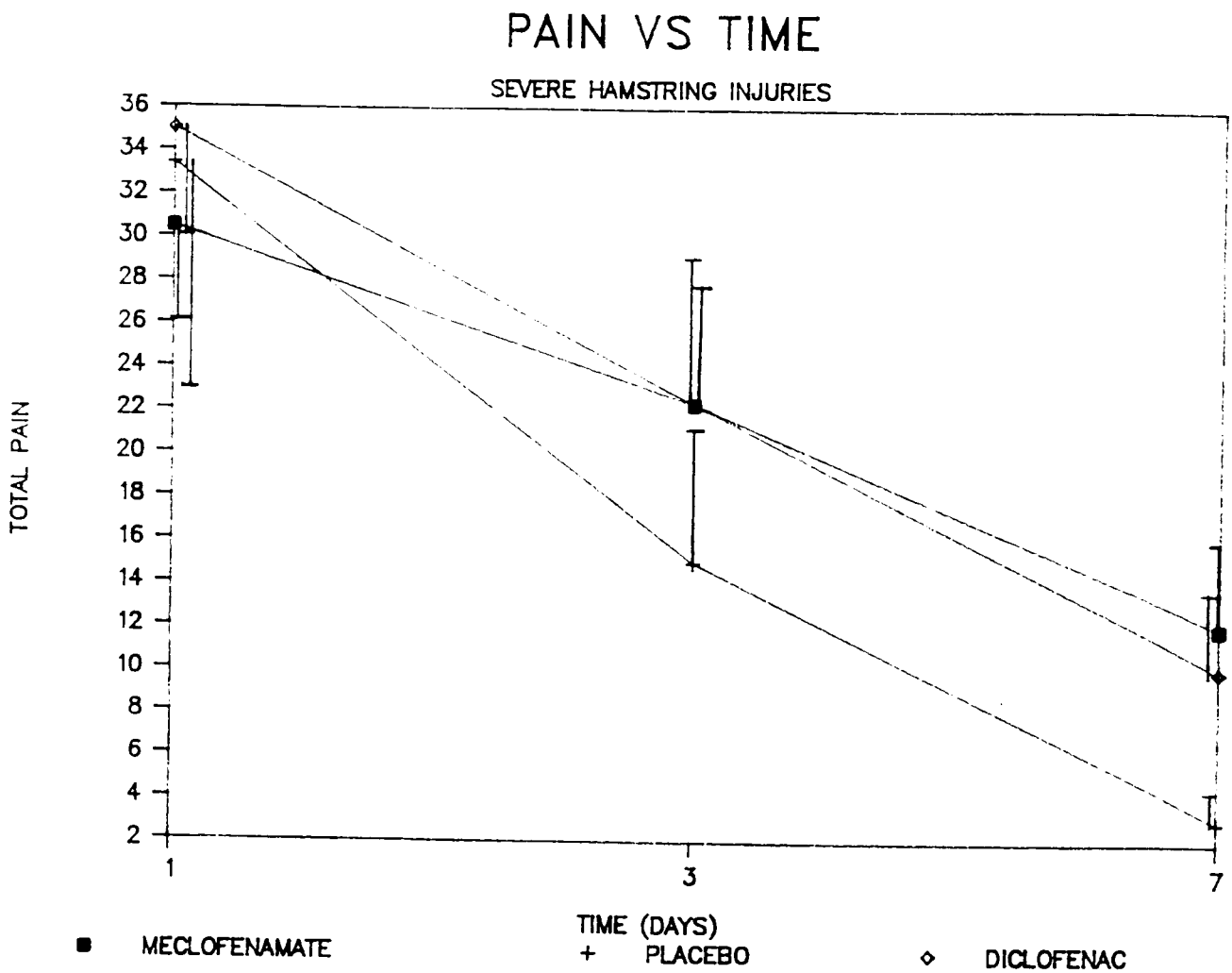

PAIN VS TIME
SEVERE HAMSTRING INJURIES
TOTAL PAIN
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
1
3
7
TIME (DAYS)
MECLOFENAMATE
PLACEBO
DICLOFENAC

Figure 4.11.

group was found to be superior to the meclofenamate group in relieving pain on day 7 (see Figure 4.11). Apart from this, there were no significant differences shown between the three groups in either injury severity sub-group. The placebo group also showed superiority over the diclofenac group although this difference was not significant ($p<0.05$).

CHAPTER 5

DISCUSSION AND CONCLUSION

Previous studies performed to test the efficacy of NSAIDs in the treatment of acute soft tissue sports injuries have failed to show that NSAID prescription positively influenced the treatment outcome. The only two studies which have shown greater efficacy than placebo, and which used objective measures to evaluate treatment outcome, failed to demonstrate a significant difference between the drug and placebo groups (Hutson, 1986; Van Heerden, 1977).

This placebo controlled study has made use of isokinetic muscle performance testing, pain assessment and swelling measurement to test the efficacy of two NSAIDs on acute hamstring muscle tears.

No significant differences could be found between any of the groups in the three tests performed. It is apparent that the placebo groups shows a tendency to improve from day 1 to day 3 in the muscle performance tests of the graph slopes are observed (see Figures 4,3., 4.4., 4.6., 4.7., 4.9.). Though this trend is not significant, it is in keeping with the research done by Almekinders

and Gilbert (1986) where injured muscle treated with NSAID was weaker in the initial post injury phase (1-4 days). It is however doubtful whether a larger sample size would prove this trend to be a significant finding. Further analysis performed on severely injured patients also failed to reveal any differences apart from the superiority of placebo over the two drug groups in the pain test (see Figure 4.11); in terms of the analgesic properties of NSAIDs, this outcome would seem unlikely and is probably a spurious finding.

No benefit could be found in the use of NSAIDs in combination with physiotherapeutic modalities. This study, therefore, can find no evidence for their use in the treatment of acute muscle trauma. This finding is compatible with the findings of Huskisson et al. (1973) and Almekinders and Gilbert (1986).

Another important finding was that the swelling ratios in all three groups dropped below 1 by day 7. This may indicate that the muscles in the injured thigh had atrophied, despite an active rehabilitation programme having been used. This being the case, it is therefore very important to start such a programme as soon as possible.

The adverse events encountered by the patients were mainly gastro-intestinal in nature, which is not an uncommon feature of NSAIDs. Drowsiness, however, is not a common adverse event encountered with these drugs but it is more commonly seen with naproxen, piroxicam

and sometimes indomethacin (Williams and Engler, 1977; Bouchier-Hayes and Jones, 1979; Simmons et al. 1982; Mann, 1983; Commandre, 1983; Edwards et al. 1984). Anthranilic acid derivatives (for example meclofenamate) are said to be poorly tolerated in terms of gastro-intestinal irritation (Katz, 1977), and it is interesting to note that 2 out of 5 (40%) adverse events in the meclofenamate group are gastro-intestinal tract (GIT) related, as opposed to 2 out of 6 (33%) in the diclofenac group and 1 out of 2 (50%) in the placebo group.

Further research into the efficacy of NSAIDs in the treatment of acute muscle injuries is not deemed to be necessary as it is doubtful that a larger sample size would alter the result. The severe injury analysis failed to show any trend in favour of drug therapy and an attempt to try and obtain a sample with more severe injuries would likely be a fruitless exercise. It took two and a half years, in two major city centres, to recruit the patients for this study and this sample is therefore a good reflection of the acute hamstring injuries that are commonly seen.

In conclusion, therefore, it was found that NSAIDs, in combination with physiotherapy treatment, have no effect on the rate of healing of acute hamstring muscle tears, and that physiotherapy treatment is effective in treating these injuries. These drugs should not be prescribed for acute muscle tears if consideration of their negative effects for example the side effects and delayed healing

(Almekinders and Gilbert, 1986). This finding therefore supports the null-hypothesis:

"Acute muscle injuries treated with meclofenamate or diclofenac, in combination with physiotherapeutic modalities (such as RICE, ultrasound, deep friction massage and stretching and strengthening exercises), heal as fast as those treated with physiotherapeutic modalities only."

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APPENDIX 1

ASSESSMENT FORM

PATIENT ASSESSMENT FORM

A COMPARATIVE STUDY OF THE EFFECTS OF MECLOFENAMATE, DICLOFENAC AND PLACEBO, IN COMBINATION WITH PHYSIOTHERAPY, ON THE HEALING OF ACUTE QUADRICEPS AND HAMSTRING MUSCLE TEARS.

INVESTIGATOR: J.F. REYNOLDS

PATIENT NAME: _____

PATIENT NUMBER: _____

DAY 1
VISIT 1

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

Inclusion criteria

[ ] consent form signed /parent for patient under 18

[ ] injury sustained within 48 hours

Injuries to

[ ] Quadriceps

[ ] Hamstrings

DAY 1
VISIT 1

PATIENT INITIALS ☐☐☐ (F M L) PATIENT NO ☐ OBSERVATION DATE ☐☐☐ (D M Y)

Exclusion Criteria

Drugs

☐ Treatment with anti-inflammatory agents

☐ Treatment with analgesics

☐ Treatment with corticosteroids

☐ Treatment with topical rubifacients

☐ Treatment with anticoagulants

☐ Severity to aspirin or any other NSAIDs

Significant diseases

☐ History of peptic ulceration

☐ Haematologic or haemopoietic disease

☐ History of asthma or bronchospasm

DAY 1
VISIT 1

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

Date of injury [ ][ ][ ] (D M Y) Time of injury 24 hour clock

Date of first assessment [ ][ ][ ] (D M Y) Time of assessment 24 hour clock

---

Type of injury (site and extent of injury):

Severity of condition

[ ] MILD [ ] MODERATE [ ] SEVERE

Details of post-injury first aid treatment:

DAY 1
VISIT 1

PATIENT INITIALS [ ][ ][ ] (F M L)

PATIENT NO [ ]

OBSERVATION DATE [ ][ ][ ] (D M Y)

DATE OF BIRTH [ ][ ][ ] (D M Y)

SEX [ ] M [ ] F

HEIGHT [ ]

WEIGHT [ ]

PREVIOUS INJURY HISTORY

[ ] None

Previous diagnosis	date started	date stopped	continuing

medication	date start	date stop	continuing	frequency	other treatment ie physio	subj assess-ment of therapy

DAY 1
VISIT1

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

MUSCLE PERFORMANCE TEST (CYBEX) AFFECTED LEG UNAFFECTED LEG

POWER ($60^{o}.sec^{-1}$)

PEAK TORQUE (Nm)

ENDURANCE ($240^{o}.SEC^{-1}$)

TOTAL WORK (J)

AVERAGE POWER (W)

PEAK TORQUE ACCELERATION ENERGY (J)

DAY 1
VISIT 1

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

PAIN (Vertical visual analogue scale)

Overall pain in previous 24 hours	Palpation Pain	Movement Pain	Walking Pain	Running Pain
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10

0 = No Pain

10 = Unbearable Pain

DAY 1
VISIT 1

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

SWELLING TEST

Measurement of thigh diameter at the site of maximum pain in both legs

Affected Leg				Unaffected Leg			
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	mean	1	2	3	mean

DAY 3
VISIT 2

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

MUSCLE PERFORMANCE TEST (CYBEX) AFFECTED LEG UNAFFECTED LEG

POWER ($60^{o}.sec^{-1}$)

PEAK TORQUE (Nm)

ENDURANCE ($240^{o}.SEC^{-1}$)

TOTAL WORK (J)

AVERAGE POWER (W)

PEAK TORQUE ACCELERATION ENERGY (J)

DAY 3
VISIT 2

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

PAIN (Vertical visual analogue scale)

Overall pain in previous 24 hours	Palpation Pain	Movement Pain	Walking Pain	Running Pain
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10

0 = No Pain

10 = Unbearable Pain

DAY 3
VISIT 2

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

SWELLING TEST

Measurement of thigh diameter at the site of maximum pain in both legs

Affected Leg				Unaffected Leg			
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	mean	1	2	3	mean

ADVERSE REACTIONS

DAY 3
VISIT 2

PATIENT INITIALS [ ][ ][ ] (F M L)

PATIENT NO [ ]

OBSERVATION DATE [ ][ ][ ] (D M Y)

DESCRIPTION	DATE OF ONSET	DATE OF CESSATION

SEVERITY

- [ ] Mild
- [ ] moderate
- [ ] severe
- [ ]

RELATIONSHIP TO INVESTIGATIONAL DRUG

- [ ] definitely
- [ ] probably
- [ ] unknown
- [ ] not related

MANAGEMENT OF INVESTIGATIONAL DRUG

- [ ] contin. same dosage
- [ ] reduce dosage
- [ ] stop drug temp
- [ ] stop drug perm

DAY 7
VISIT 3

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

MUSCLE PERFORMANCE TEST (CYBEX) AFFECTED LEG UNAFFECTED LEG

POWER ($60^{o}.sec^{-1}$)

PEAK TORQUE (Nm)

ENDURANCE ($240^{o}.SEC^{-1}$)

TOTAL WORK (J)

AVERAGE POWER (W)

PEAK TORQUE ACCELERATION ENERGY (J)

DAY 7
VISIT 3

PATIENT INITIALS | | | | (F M L) PATIENT NO | | OBSERVATION DATE | | | | (D M Y)

PAIN (Vertical visual analogue scale)

Overall pain in previous 24 hours	Palpation Pain	Movement Pain	Walking Pain	Running Pain
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10

0 = No Pain

10 = Unbearable Pain

DAY 7
VISIT 3

PATIENT INITIALS [ ][ ][ ] (F M L) PATIENT NO [ ] OBSERVATION DATE [ ][ ][ ] (D M Y)

SWELLING TEST

Measurement of thigh diameter at the site of maximum pain in both legs

Affected Leg				Unaffected Leg			
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	mean	1	2	3	mean

ADVERSE REACTIONS

DAY 7
VISIT 3

PATIENT INITIALS [ ][ ][ ] (F M L)

PATIENT NO [ ]

OBSERVATION DATE [ ][ ][ ] (D M Y)

DESCRIPTION	DATE OF ONSET	DATE OF CESSATION

SEVERITY

- [ ] Mild
- [ ] moderate
- [ ] severe
- [ ]

RELATIONSHIP TO INVESTIGATIONAL DRUG

- [ ] definitely
- [ ] probably
- [ ] unknown
- [ ] not related

MANAGEMENT OF INVESTIGATIONAL DRUG

- [ ] contin. same dosage
- [ ] reduce dosage
- [ ] stop drug temp
- [ ] stop drug perm

CONCURRENT THERAPY

GIVE DETAILS OF PHYSIOTHERAPY TREATMENT IN SPACE PROVIDED

DAY 1

DAY 2

DAY 3

DAY 4

DAY 5

DAY 6

DAY 7

CONSENT FORM

A study of the effects of sodium meclofenamate and diclofenac sodium on the physiotherapy treament of acute quadriceps and hamstring muscle injuries.

A trial is being conducted over seven days to establish the effects of anti-inflammatory drugs on physiotherapy treatment (i.e ultra-sound, cross friction massage and exercise.)

Anti-inflammatory drugs are used to reduce inflammation and pain after injury. It is therefore thought that they hasten healing and rehabilitation of injuries, enabling the individual to return to sport sooner.

The capsule or tablet that you receive may or may not be the active drug. Whether it is or not is also unknown to the therapists and will only be revealed when a code is broken at the end of the trial.

The drugs are harmless to most people, but if you experience any problems you may withdraw from the trial immediately and continue with normal physiotherapy treatment.

I.....hereby declare that I understand fully the details and implications of the abovementioned trial and agree to partake in the trial and comply with the protocol.

Signed .....

Date .....

Doctor .....

Date .....

(Afrikaans ook verkrygbaar)

TOESTEMMINGSVORM

A study of the effects of sodium meclofenamate and diclofenac sodium on the physiotherapy treatment of acute quadriceps and hamstring muscle injuries.

'n Proef word gedoen oor 'n tydperk van sewe dae om die invloed van nie-steroied anti-inflammatoriese middels op fisioterapie behandeling te ondersoek (byvoorbeeld ultraklank, dwaarsfriksies en oefeninge.)

Anti-inflammatoriese middels word gebruik om die inflammatoriese proses en pyn na besering te verlig. Dit word daarom aanvaar dat dit herstel en die rehabilitasie proses bevorder en dus die persoon in staat stel om sy sport vinniger te hervat na 'n besering.

Die kapsuul of tablet wat u gaan kry mag aktief of onaktief wees. Die terapeut weet ook nie of u die aktiewe of onaktiewe middel gebruik nie. Dit word slegs aan die einde van die eksperiment onthul.

Die middels is skadeloos vir die meeste mense. Indien u wel enige probleme ervaar staan dit u vry om u self onmiddelik te onttrek van die eksperiment en aan te gaan met normale fisioterapie.

Ek..... verklaar hiermee dat ek al die besonderhede en implikasies van die bogenoemde eksperiment ten volle begryp. Ek gee hiermee my toestemming om deel te neem aan die eksperiment en om my by die die protokol te hou.

Geteken .....

Datum .....

Dokter .....

Datum .....

(English also available)

APPENDIX 2

PATIENT DEMOGRAPHIC DATA AND DETAILS OF INJURY

NAME	SWB
NUMBER	I
AGE	24
SEX	M
HEIGHT	195
WEIGHT	100
INJURY TO	HAMSTRING
SIDE	L
DATE	30387
SEVERITY	1
INJ:TRT.TIME	1200
ADVRSE REACTION	NONE
SIGNIF.DISEASES	NONE
TREATMENT	MECLOFENAMATE

NAME	IEG
NUMBER	III
AGE	22
SEX	M
HEIGHT	180
WEIGHT	73
INJURY TO	QUADRICEPS
SIDE	L
DATE	180387
SEVERITY	2
INJ:TRT.TIME	2200
ADVRSE REACTION	NONE
SIGNIF.DISEASES	NONE
TREATMENT	PLACEBO

NAME	COS
NUMBER	IV
AGE	25
SEX	M
HEIGHT	178
WEIGHT	75
INJURY TO	HAMSTRING
SIDE	R
DATE	250387
SEVERITY	1
INJ:TRT.TIME	2000
ADVRSE REACTION	NONE

GROUP DATA

MECLOFENAMATE GROUP

AGE	SEX	HT	WT	SEVER.
24.0	M	195.0	100.0	1.0
25.0	M	178.0	75.0	1.0
18.0	M	183.0	77.0	2.0
20.0	M	185.0	96.0	2.0
20.0	M	183.0	70.0	2.0
48.0	M	182.0	93.0	2.0
22.0	M	160.0	54.0	2.0
42.0	M	183.0	89.0	2.0
53.0	M	180.0	70.0	2.0
28.0	M	177.0	73.0	2.0
27.0	M	167.0	94.0	2.0
46.0	M	180.0	68.0	1.0
29.0	M	187.0	78.0	2.0
22.0	M	181.0	81.0	3.0
23.0	M	189.0	86.0	2.0
29.0	M	167.0	66.0	2.0
21.0	M	184.0	96.0	3.0
18.0	M	182.0	66.0	1.0
40.0	M	172.0	86.0	2.0
30.0	M	175.0	68.0	3.0
35.0	M	180.0	84.0	2.0
28.0	M	173.0	82.0	1.0
29.5		179.2	79.6	1.9
10.0		7.9	12.1	0.6

PLACEBO GROUP

AGE	SEX	HT	WT	SEVER.
22.0	M	180.0	73.0	2.0
19.0	M	182.0	86.0	1.0
42.0	M	170.0	70.0	2.0
25.0	M	190.0	94.0	1.0
24.0	M	175.0	82.0	1.0
25.0	M	185.0	82.0	3.0
37.0	M	175.0	64.0	1.0
39.0	M	178.0	77.0	1.0
27.0	M	185.0	76.0	1.0
49.0	M	180.0	72.0	1.0
20.0	M	185.0	65.0	2.0
29.0	M	176.0	83.0	2.0
29.0	M	177.0	85.0	3.0
19.0	M	177.0	70.0	2.0
30.0	M	166.0	69.0	2.0
25.0	M	181.0	81.0	2.0
22.0	M	175.0	82.0	2.0
27.0	M	185.0	84.0	2.0
24.0	M	180.0	76.0	2.0
30.0	M	195.0	90.0	1.0
28.2		179.9	78.1	1.7

SIGNIF.DISEASES	NONE	7.8	6.6	8.2	0.6
TREATMENT	MECLOFENAMATE				

NAME	SCC
NUMBER	VI
AGE	19
SEX	M
HEIGHT -	182
WEIGHT	86
INJURY TO	QUADRICEPS
SIDE	L
DATE	310387
SEVERITY	1
INJ:TRT.TIME	1800
ADVRSE REACTION	NONE

DICLOFENAC GROUP

AGE	SEX	HT	WT	SEVER.
23.0	M	182.0	94.0	2.0
27.0	M	172.0	76.0	1.0
43.0	M	181.0	80.0	2.0
52.0	M	165.0	68.0	2.0
48.0	M	173.0	77.0	2.0
26.0	M	178.0	83.0	1.0
27.0	F	160.0	93.0	1.0
42.0	M	172.0	68.0	2.0
28.0	M	182.0	64.0	2.0
22.0	M	182.0	87.0	3.0
28.0	M	177.0	95.0	2.0
23.0	M	194.0	86.0	1.0
40.0	M	178.0	87.0	1.0
30.0	M	157.0	52.0	3.0
37.0	M	172.0	70.0	2.0
20.0	M	175.0	88.0	3.0
27.0	M	176.0	80.0	2.0
20.0	M	192.0	76.0	2.0
31.3		175.8	79.1	1.9
9.9		9.4	11.5	0.7

SIGNIF.DISEASES	NONE
TREATMENT	PLACEBO
NAME	RHH
NUMBER	VII
AGE	18
SEX	M
HEIGHT	183
WEIGHT	77
INJURY TO	HAMSTRING
SIDE	R
DATE	10487
SEVERITY	2
INJ:TRT.TIME	2000
ADVRSE REACTION	STOMACH CRAMPS NO FOOD

SIGNIF.DISEASES	CHONDROMALACIA PATELLAE
TREATMENT	MECLOFENAMATE
NAME	PAG
NUMBER	VIII
AGE	20
SEX	M
HEIGHT	185
WEIGHT	96
INJURY TO	QUADRICEPS
SIDE	R
DATE	280487
SEVERITY	2
INJ:TRT.TIME	2000
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	MECLOFENAMATE

NAME	AMD
NUMBER	IX
AGE	42
SEX	M
HEIGHT	170
WEIGHT	70
INJURY TO	HAMSTRING
SIDE	L
DATE	240987
SEVERITY	2
INJ:TRT.TIME	2530
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	PLACEBO

NAME	RLJ
NUMBER	X
AGE	20
SEX	M
HEIGHT	183
WEIGHT	70
INJURY TO	QUADRICEPS
SIDE	R
DATE	30587
SEVERITY	2
INJ:TRT.TIME	2300
ADVRSE REACTION	ABD CRAMPS THROUGHOUT

SIGNIF.DISEASES	NONE
TREATMENT	MECLOFENAMATE

NAME	CFK
NUMBER	XI
AGE	25
SEX	M
HEIGHT	190
WEIGHT	94
INJURY TO	QUADRICEPS
SIDE	R

DATE	200587
SEVERITY	1
INJ:TRT.TIME	1000
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	PLACEBO

NAME	NHP
NUMBER	XIII
AGE	24
SEX	M
HEIGHT	175
WEIGHT	82
INJURY TO	HAMSTRING
SIDE	L
DATE	240587
SEVERITY	1
INJ:TRT.TIME	2500
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	PLACEBO

NAME	CW
NUMBER	1
AGE	23
SEX	M
HEIGHT	182
WEIGHT	94
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	50887
SEVERITY	2
INJ:TRT.TIME	4430
ADVRSE REACTION	HEADACHE FROM DAY 7

SIGNIF.DISEASES	ASTHMA 6 Y AGO NO REC. HX
TREATMENT	D

NAME	BA
NUMBER	2
AGE	27
SEX	M

HEIGHT	172
WEIGHT	76
INJURY TO	QUADRICEPS
SIDE	LEFT
DATE	80887
SEVERITY	1
INJ:TRT.TIME	2030
ADVRSE REACTION	NONE
SIGNIF.DISEASES	NONE
TREATMENT	D
NAME	CE
NUMBER	3
AGE	25
SEX	M
HEIGHT	185
WEIGHT	82
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	90987
SEVERITY	3
INJ:TRT.TIME	1200
ADVRSE REACTION	NONE
SIGNIF.DISEASES	NONE
TREATMENT	P
NAME	RHS
NUMBER	4
AGE	37
SEX	M
HEIGHT	175
WEIGHT	64
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	130987
SEVERITY	1
INJ:TRT.TIME	2830
ADVRSE REACTION	NONE
SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	CS
NUMBER	5
AGE	43
SEX	M
HEIGHT	181
WEIGHT	80
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	120987
SEVERITY	2
INJ:TRT.TIME	4700
ADVRSE REACTION	NONE
SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	DW
NUMBER	6
AGE	52
SEX	M
HEIGHT	165
WEIGHT	68
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	130987
SEVERITY	2
INJ:TRT.TIME	3145
ADVRSE REACTION	NONE
SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	SL
NUMBER	8
AGE	48
SEX	M
HEIGHT	173
WEIGHT	77
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	170987
SEVERITY	2
INJ:TRT.TIME	200
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	DB
NUMBER	9
AGE	48
SEX	M
HEIGHT	182
WEIGHT	93
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	160987
SEVERITY	2
INJ:TRT.TIME	3700
ADVRSE REACTION	TIREDN. & LETHARGY D4

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	RD
NUMBER	10
AGE	39
SEX	M
HEIGHT	178
WEIGHT	77
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	31087
SEVERITY	1
INJ:TRT.TIME	4530
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	JW
NUMBER	13
AGE	22
SEX	M
HEIGHT	160
WEIGHT	54
INJURY TO	QUADRICEPS FEMORIS
SIDE	LEFT
DATE	171087
SEVERITY	2
INJ:TRT.TIME	4700
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	AM
NUMBER	14
AGE	27
SEX	M
HEIGHT	185
WEIGHT	76
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	261087
SEVERITY	1
INJ:TRT.TIME	2045
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	DS
NUMBER	15
AGE	42
SEX	M
HEIGHT	183
WEIGHT	89
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	231187
SEVERITY	2
INJ:TRT.TIME	2015
ADVRSE REACTION	C/O DRY MOUTH DAY 2

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	CT
NUMBER	16
AGE	49
SEX	M
HEIGHT	180
WEIGHT	72
INJURY TO	HAMSTRING
SIDE	RIGHT

DATE	280188
SEVERITY	1
INJ:TRT.TIME	2250
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	AB
NUMBER	17
AGE	20
SEX	M
HEIGHT	185
WEIGHT	65
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	261187
SEVERITY	2
INJ:TRT.TIME	2300
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	PK
NUMBER	18
AGE	29
SEX	M
HEIGHT	176
WEIGHT	83
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	260288
SEVERITY	2
INJ:TRT.TIME	4800
ADVRSE REACTION	DROWSY & TIRED D3

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	MEP
NUMBER	19
AGE	53
SEX	M

HEIGHT	180
WEIGHT	70
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	270289
SEVERITY	2
INJ:TRT.TIME	48
ADVRSE REACTION	DIARRHOEA DAY 3

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	IB
NUMBER	20
AGE	26
SEX	M
HEIGHT	178
WEIGHT	83
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	120488
SEVERITY	1
INJ:TRT.TIME	1815
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	BG
NUMBER	22
AGE	27
SEX	F
HEIGHT	160
WEIGHT	93
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	270488
SEVERITY	1
INJ:TRT.TIME	1700
ADVRSE REACTION	CRAMPS STOMACH D 3

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	BF
NUMBER	24
AGE	28
SEX	M
HEIGHT	177
WEIGHT	73
INJURY TO	280488
SIDE	QUADRICEPS FEMORIS
DATE	RIGHT
SEVERITY	2
INJ:TRT.TIME	2100
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	LS
NUMBER	27
AGE	27
SEX	M
HEIGHT	167
WEIGHT	94
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	140588
SEVERITY	2
INJ:TRT.TIME	4130
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	TH
NUMBER	28
AGE	42
SEX	M
HEIGHT	172
WEIGHT	68
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	220588
SEVERITY	2
INJ:TRT.TIME	2500
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	GS
NUMBER	29
AGE	46
SEX	M
HEIGHT	180
WEIGHT	68
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	280588
SEVERITY	1
INJ:TRT.TIME	4800
ADVRSE REACTION	DROWSY D1, L/S D3

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	GP
NUMBER	30
AGE	28
SEX	M
HEIGHT	182
WEIGHT	64
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	280588
SEVERITY	2
INJ:TRT.TIME	4330
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	GGVZ
NUMBER	38
AGE	29
SEX	M
HEIGHT	187
WEIGHT	78
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	50588
SEVERITY	2
INJ:TRT.TIME	230
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	TW
NUMBER	40
AGE	22
SEX	M
HEIGHT	182
WEIGHT	87
INJURY TO	QUADRICEPS FEMORIS
SIDE	LEFT
DATE	170588
SEVERITY	3
INJ:TRT.TIME	1600
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	AFM
NUMBER	41
AGE	29
SEX	M
HEIGHT	177
WEIGHT	85
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	230588
SEVERITY	3
INJ:TRT.TIME	1930
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	SE
NUMBER	42
AGE	28
SEX	M
HEIGHT	177
WEIGHT	95
INJURY TO	HAMSTRING
SIDE	RIGHT

DATE	20688
SEVERITY	2
INJ:TRT.TIME	1600
ADVRSE REACTION	DIARROEA

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	MAES
NUMBER	43
AGE	19
SEX	M
HEIGHT	177
WEIGHT	70
INJURY TO	QUADRICEPS FEMORIS
SIDE	LEFT
DATE	60788
SEVERITY	2
INJ:TRT.TIME	1400
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	PDS
NUMBER	44
AGE	22
SEX	M
HEIGHT	181
WEIGHT	81
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	260688
SEVERITY	3
INJ:TRT.TIME	26
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	ACN
NUMBER	45
AGE	30
SEX	M

HEIGHT	166
WEIGHT	69
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	180788
SEVERITY	2
INJ:TRT.TIME	4345
ADVRSE REACTION	INCR f STOOLS TIRED D3

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	JLCS
NUMBER	46
AGE	25
SEX	M
HEIGHT	181
WEIGHT	81
INJURY TO	QUADRICEPS FEMORIS
SIDE	LEFT
DATE	30888
SEVERITY	2
INJ:TRT.TIME	1730
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	AGD
NUMBER	47
AGE	23
SEX	M
HEIGHT	189
WEIGHT	86
INJURY TO	QUADRICEPS FEMORIS
SIDE	LEFT
DATE	180888
SEVERITY	2
INJ:TRT.TIME	2800
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	DWM
NUMBER	48
AGE	29
SEX	M
HEIGHT	167
WEIGHT	66
INJURY TO	QUADRICEPS FEMORIS
SIDE	RIGHT
DATE	31188
SEVERITY	2
INJ:TRT.TIME	2200
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	RC
NUMBER	49
AGE	21
SEX	M
HEIGHT	184
WEIGHT	96
INJURY TO	QUADRICEPS FEMORIS
SIDE	RIGHT
DATE	60389
SEVERITY	3
INJ:TRT.TIME	3745
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	AWVN
NUMBER	50
AGE	18
SEX	M
HEIGHT	182
WEIGHT	66
INJURY TO	QUADRICEPS FEMORIS
SIDE	LEFT
DATE	130389
SEVERITY	1
INJ:TRT.TIME	4630
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	CS
NUMBER	53
AGE	40
SEX	M
HEIGHT	172
WEIGHT	86
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	261188
SEVERITY	2
INJ:TRT.TIME	4800
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	RT
NUMBER	55
AGE	23
SEX	M
HEIGHT	194
WEIGHT	86
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	150589
SEVERITY	1
INJ:TRT.TIME	1930
ADVRSE REACTION	DROWZY DAY 3

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	MH
NUMBER	56
AGE	40
SEX	M
HEIGHT	178
WEIGHT	87
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	61288
SEVERITY	1
INJ:TRT.TIME	3640
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	SJ
NUMBER	57
AGE	22
SEX	M
HEIGHT	175
WEIGHT	82
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	270389
SEVERITY	2
INJ:TRT.TIME	4700
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	BM
NUMBER	61
AGE	30
SEX	M
HEIGHT	175
WEIGHT	68
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	301088
SEVERITY	3
INJ:TRT.TIME	2320
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	BGR
NUMBER	62
AGE	30
SEX	M
HEIGHT	157
WEIGHT	52
INJURY TO	HAMSTRING
SIDE	RIGHT

DATE	261188
SEVERITY	3
INJ:TRT.TIME	4000
ADVRSE REACTION	SLEEPY DAY 3

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	REWC
NUMBER	64
AGE	35
SEX	M
HEIGHT	180
WEIGHT	84
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	170788
SEVERITY	2
INJ:TRT.TIME	4800
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	DC
NUMBER	65
AGE	28
SEX	M
HEIGHT	173
WEIGHT	82
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	170988
SEVERITY	1
INJ:TRT.TIME	4600
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	M

NAME	SR
NUMBER	67
AGE	27
SEX	M

HEIGHT	183
WEIGHT	84
INJURY TO	HAMSTRING
SIDE	LEFT AND RIGHT
DATE	170988
SEVERITY	2
INJ:TRT.TIME	4730
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	DFG
NUMBER	68
AGE	24
SEX	M
HEIGHT	180
WEIGHT	76
INJURY TO	QUADRICEPS FEMORIS
SIDE	RIGHT
DATE	70489
SEVERITY	2
INJ:TRT.TIME	1300
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	GK
NUMBER	69
AGE	37
SEX	M
HEIGHT	172
WEIGHT	70
INJURY TO	HAMSTRING
SIDE	RIGHT
DATE	261288
SEVERITY	2
INJ:TRT.TIME	3300
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	MH
NUMBER	70
AGE	20
SEX	M
HEIGHT	175
WEIGHT	88
INJURY TO	HAMSTRING
SIDE	
DATE	220189
SEVERITY	3
INJ:TRT.TIME	2600
ADVRSE REACTION	TIRED D3 - D7

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	MM
NUMBER	71
AGE	30
SEX	M
HEIGHT	195
WEIGHT	90
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	250189
SEVERITY	2
INJ:TRT.TIME	2400
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	P

NAME	RH
NUMBER	72
AGE	27
SEX	M
HEIGHT	176
WEIGHT	80
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	90389
SEVERITY	2
INJ:TRT.TIME	1900
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

NAME	CP
NUMBER	75
AGE	20
SEX	M
HEIGHT	192
WEIGHT	76
INJURY TO	HAMSTRING
SIDE	LEFT
DATE	151088
SEVERITY	2
INJ:TRT.TIME	4800
ADVRSE REACTION	NONE

SIGNIF.DISEASES	NONE
TREATMENT	D

APPENDIX 3

PATIENT TEST DATA

HAMSTRING SERIES

QUADRICEPS PEAK TORQUE : MECLOFENAMATE GROUP

Q.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	280	315	279	314	310	302	0.889	0.889	1.026
	165	231	185	212	189	226	0.714	0.873	0.836
	237	221	193	187	214	187	1.072	1.032	1.144
	149	172	174	161	186	167	0.866	1.081	1.114
	207	231	224	236	278	274	0.896	0.949	1.015
	163	182	182	201	187	194	0.896	0.905	0.964
	174	213	167	197	182	207	0.817	0.848	0.879
	193	241	207	251	250	262	0.801	0.825	0.954
	229	245	225	254	252	252	0.935	0.886	1.000
	181	187	176	171	138	152	0.968	1.029	0.908
	139	209	176	197	175	197	0.665	0.893	0.888
	225	256	207	254	233	273	0.879	0.815	0.853
	196	100	189	207	214	222	1.960	0.913	0.964
MEAN	195	216	199	219	216	224	0.951	0.918	0.965
SD.	38	49	29	40	45	44	0.308	0.079	0.091

QUADRICEPS PEAK TORQUE : PLACEBO GROUP

Q.P.P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	131	128	128	128	134	122	1.023	1.000	1.098
	183	199	162	188	181	204	0.920	0.862	0.887
	223	208	252	227	257	231	1.072	1.110	1.113
	184	167	149	161	167	169	1.102	0.925	0.988
	236	221	266	251	256	245	1.068	1.060	1.045
	205	235	214	217	248	236	0.872	0.986	1.051
	198	224	235	254	245	251	0.884	0.925	0.976
	237	243	214	224	220	216	0.975	0.955	1.019
	256	229	237	106	243	267	1.118	2.236	0.910
	224	287	214	228	222	232	0.780	0.939	0.957
	141	148	151	152	152	146	0.953	0.993	1.041
	154	295	324	292	282	288	0.522	1.110	0.979
	292	251	185	250	299	265	1.163	0.740	1.128
	215	273	266	250	253	281	0.788	1.064	0.900
MEAN	196	213	205	200	216	217	0.946	1.065	1.007
SD.	39	41	49	49	42	40	0.165	0.339	0.075

QUADRICEPS PEAK TORQUE : DICLOFENAC GROUP

Q.P.D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	237	269	241	238	208	234	0.881	1.013	0.889
	159	191	153	165	180	180	0.832	0.927	1.000
	148	179	123	172	153	164	0.827	0.715	0.933
	121	134	149	153	148	160	0.903	0.974	0.925
	244	237	236	241	251	256	1.030	0.979	0.980
	207	180	198	172	186	156	1.150	1.151	1.192
	245	296	260	267	267	259	0.857	0.974	1.031
	168	201	197	207	167	168	0.836	0.952	0.994
	153	169	195	183	183	199	0.905	1.066	0.920
	229	270	240	251	263	283	0.848	0.956	0.929
	237	255	267	274	286	281	0.929	0.974	1.018
	236	256	235	254	247	242	0.922	0.925	1.021
	100	158	121	139	145	150	0.633	0.871	0.967
	215	242	210	216	224	218	0.888	0.972	1.028
	267	262	320	319	299	317	1.019	1.003	0.943
	193	230	188	228	196	218	0.839	0.825	0.899
	232	257	261	271	236	235	0.903	0.963	1.004
MEAN	160	177	172	178	174	175	0.894	0.955	0.981
SD.	44	39	47	47	46	49	0.105	0.091	0.069

HAMSTRING PEAK TORQUE : MECLOFENAMATE GROUP

H.P.M.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	189	196	188	199	204	206	0.964	0.945	0.990
	71	119	94	120	100	120	0.597	0.783	0.833
	119	80	135	82	141	123	1.488	1.646	1.146
	76	137	84	130	170	156	0.555	0.646	1.090
	93	109	104	95	132	129	0.853	1.095	1.023
	75	134	88	140	113	137	0.560	0.629	0.825
	98	118	114	121	110	113	0.831	0.942	0.973
	71	149	122	155	148	165	0.477	0.787	0.897
	89	122	103	134	138	138	0.730	0.769	1.000
	74	132	103	105	94	89	0.561	0.981	1.056
	28	104	36	92	36	98	0.269	0.391	0.367
	45	161	58	149	73	166	0.280	0.389	0.440
	99	118	99	106	128	123	0.839	0.934	1.041
MEAN	87	129	102	125	122	136	0.692	0.841	0.899
SD.	37	27	35	30	41	30	0.308	0.312	0.230

HAMSTRING PEAK TORQUE : PLACEBO GROUP							RATIO		
H.P.P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1	R.D3	R.D7
	50	85	46	80	55	65	0.588	0.575	0.846
	103	85	104	89	116	100	1.212	1.169	1.160
	37	111	80	119	110	117	0.333	0.672	0.940
	107	111	100	111	113	111	0.964	0.901	1.018
	157	155	156	155	160	157	1.013	1.006	1.019
	132	140	136	149	161	172	0.943	0.913	0.936
	71	129	80	134	100	155	0.550	0.597	0.645
	75	107	96	113	110	126	0.701	0.850	0.873
	94	130	122	122	148	172	0.723	1.000	0.860
	61	137	69	126	83	142	0.445	0.548	0.585
	73	85	85	107	103	99	0.859	0.794	1.040
	80	169	173	149	132	142	0.473	1.161	0.930
	95	153	130	161	182	186	0.621	0.807	0.978
	79	143	104	165	139	181	0.552	0.630	0.768
MEAN	87	124	106	127	122	138	0.612	0.823	0.860
SD.	30	27	33	25	33	35	0.144	0.208	0.150

HAMSTRING PEAK TORQUE : DICLOFENAC GROUP							RATIO		
H.P.D.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1	R.D3	R.D7
	56	169	70	176	120	165	0.331	0.398	0.727
	46	108	71	108	81	113	0.426	0.657	0.717
	26	113	43	107	69	94	0.230	0.402	0.734
	71	81	71	84	89	85	0.877	0.845	1.047
	161	159	159	157	160	160	1.013	1.013	1.000
	80	92	91	84	106	98	0.870	1.083	1.082
	118	156	134	168	130	163	0.756	0.798	0.798
	52	118	89	118	110	119	0.441	0.754	0.924
	91	113	114	113	119	117	0.805	1.009	1.017
	119	137	141	137	144	164	0.869	1.029	0.878
	159	171	149	169	159	174	0.930	0.882	0.914
	125	175	116	161	139	165	0.714	0.720	0.842
	20	76	15	67	19	75	0.263	0.224	0.253
	87	118	93	113	102	114	0.737	0.823	0.895
	74	138	123	175	131	162	0.536	0.703	0.809
	90	136	105	138	108	136	0.662	0.761	0.794
	121	117	137	141	169	144	1.034	0.972	1.174
MEAN	88	128	101	130	115	132	0.676	0.769	0.859
SD.	40	30	38	33	36	32	0.251	0.235	0.198

QUADRICEPS TOTAL WORK : MECLOFENAMATE GROUP

G.E.M.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	3503	3610	3402	3606	3314	3779	0.970	0.943	0.877
	2956	2506	2994	3293	2814	2947	1.180	0.909	0.955
	2673	2652	2561	2352	2638	1989	1.008	1.089	1.326
	1744	2232	2191	2125	2011	2384	0.781	1.031	0.844
	2336	2269	1676	2033	1913	2897	1.030	0.824	0.660
	2142	2106	1987	2126	2048	2115	1.017	0.935	0.968
	1916	2381	1845	2152	2062	2394	0.805	0.857	0.861
	1628	2058	1679	2196	1907	2403	0.791	0.765	0.794
	1920	2408	2222	2065	2503	2633	0.797	1.076	0.951
	2410	2811	2511	2369	2329	2170	0.857	1.060	1.073
	1705	2397	2360	2353	2435	2264	0.711	1.003	1.076
	2981	3279	3320	3493	3500	3322	0.909	0.950	1.054
	2715	2621	2461	2436	2838	2676	1.036	1.010	1.061
MEAN	2356	2564	2401	2508	2486	2613	0.915	0.958	0.961
SD.	559	432	544	541	501	493	0.131	0.096	0.159

QUADRICEPS TOTAL WORK : PLACEBO GROUP

G.E.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	2092	2494	1869	1899	2128	2009	0.839	0.984	1.059
	2873	2951	2654	2867	2894	3192	0.974	0.926	0.907
	2117	3274	2964	3179	2971	3200	0.647	0.932	0.928
	1721	1830	1559	1647	1912	1739	0.940	0.947	1.099
	3482	3037	3512	3120	3535	3296	1.147	1.126	1.073
	2646	2799	2919	2869	2941	2974	0.945	1.017	0.989
	1477	2535	2162	2139	2562	2490	0.583	1.011	1.029
	2590	2928	3230	3130	3095	3215	0.885	1.032	0.963
	2350	2456	2998	2711	2786	2724	0.957	1.106	1.023
	2065	2756	2198	2796	2320	2229	0.749	0.786	1.041
	1405	1399	1414	1489	1639	1459	1.004	0.950	1.123
	2831	3430	3816	2893	4376	3774	0.825	1.319	1.160
	3597	3088	3521	3057	3793	3684	1.165	1.152	1.030
	3244	3631	3756	3752	4021	3871	0.893	1.001	1.039
MEAN	2464	2758	2755	2682	2927	2847	0.897	1.021	1.033
SD.	674	577	771	624	770	736	0.158	0.122	0.068

QUADRICEPS TOTAL WORK : DICLOFENAC GROUP							RATIO		
Q.E.D.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1	R.D3	R.D7
	3158	3133	3589	3631	3671	3738	1.008	0.988	0.982
	1631	1715	1665	1553	1760	1866	0.951	1.072	0.943
	2316	2296	2285	2239	2204	2197	1.009	1.021	1.003
	1345	1671	1405	1561	1519	1675	0.805	0.900	0.907
	3973	3681	4049	3850	3817	3797	1.079	1.052	1.005
	2012	1424	2432	2241	2802	2329	1.413	1.085	1.203
	3552	3907	3784	4336	3334	3221	0.909	0.873	1.035
	2394	2270	2350	2456	2544	2620	1.055	0.957	0.971
	1465	1743	1695	1796	1619	1831	0.841	0.944	0.884
	2705	2648	2632	2467	2921	2911	1.022	1.067	1.003
	3454	3405	3491	3501	3681	4098	1.014	0.997	0.898
	2937	3835	2912	3783	3332	3951	0.766	0.770	0.843
	1403	1858	1548	1660	1597	1725	0.755	0.933	0.926
	2832	3225	2848	2879	3057	2611	0.878	0.989	1.171
	2345	3827	3351	3588	3634	3523	0.743	0.934	1.032
	2518	2694	3189	3313	3325	3314	0.935	0.963	1.003
	2589	3162	3456	3647	3046	3114	0.819	0.948	0.978
MEAN	2537	2735	2746	2853	2815	2854	0.941	0.970	0.988
SD.	756	832	809	889	776	797	0.159	0.078	0.090

HAMSTRING TOTAL WORK : MECLOFENAMATE GROUP							RATIO		
H.E.M.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1	R.D3	R.D7
	1962	2121	1915	2134	2363	2360	0.925	0.897	1.001
	1604	1483	2066	2413	1932	2005	1.082	0.856	0.964
	1233	1380	1849	1402	1849	1952	0.893	1.319	0.947
	782	1509	1242	1653	1626	1416	0.518	0.751	1.148
	1138	941	1128	1119	1163	1474	1.209	1.008	0.789
	1814	2313	2020	2539	2032	2545	0.784	0.796	0.798
	1450	1546	1364	1518	1456	1240	0.938	0.899	1.174
	1144	2040	1790	2181	2158	2243	0.561	0.821	0.962
	1358	2004	1410	1911	1975	2193	0.678	0.738	0.901
	1183	1528	1379	1497	1241	1212	0.774	0.921	1.024
	349	1579	454	1349	625	1269	0.221	0.337	0.493
	924	1949	1096	2027	1387	1721	0.474	0.541	0.806
	1602	1552	1236	1383	1840	2008	1.032	0.894	0.916
MEAN	1273	1688	1458	1779	1665	1818	0.776	0.829	0.917
SD.	419	359	440	432	458	441	0.268	0.221	0.168

HAMSTRING TOTAL WORK : PLACEBO GROUP

H.E.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	RATIO R.D3	RATIO R.D7
	1097	1775	770	1446	1219	1445	0.618	0.533	0.844
	1209	816	1585	1365	1606	1445	1.482	1.161	1.111
	114	2441	1345	2655	1444	2715	0.047	0.507	0.532
	1085	1548	1292	1343	1491	1301	0.701	0.962	1.146
	2548	1707	2442	1798	2336	1928	1.493	1.358	1.212
	1394	1177	1613	1647	1407	1948	1.184	0.979	0.722
	1768	2355	2065	2745	2533	2959	0.751	0.752	0.856
	819	2134	1335	2252	1502	2041	0.384	0.593	0.736
	2165	2291	2707	2214	2789	2382	0.945	1.223	1.171
	1041	1294	1246	1940	1343	1959	0.550	0.642	0.686
	463	989	672	989	911	1031	0.468	0.679	0.884
	1301	2397	2283	2151	2547	2805	0.543	1.061	0.908
	2087	2789	2843	2712	2984	3009	0.748	1.048	0.992
	1365	2187	1252	2350	2263	2561	0.624	0.533	0.884
MEAN	1318	1893	1675	1972	1884	2109	0.753	0.859	0.906
SD.	635	569	661	539	639	624	0.391	0.277	0.194

HAMSTRING TOTAL WORK : DICLOFENAC GROUP

H.E.D.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	RATIO R.D3	RATIO R.D7
	493	1571	696	1924	1954	2503	0.314	0.362	0.781
	232	774	789	949	826	620	0.300	0.831	1.332
	278	955	559	942	862	906	0.291	0.593	0.951
	382	495	256	496	313	518	0.772	0.516	0.604
	3092	2854	3119	2806	2896	3016	1.083	1.112	0.960
	1063	966	1362	1478	1480	1550	1.100	0.922	0.955
	1695	2222	2053	2213	1860	1746	0.763	0.928	1.065
	928	1351	1082	1726	1724	1984	0.687	0.627	0.869
	974	974	1176	1206	1135	1083	1.000	0.975	1.048
	2123	2194	2163	2580	2500	2430	0.968	0.838	1.029
	2325	2759	2213	2763	2163	2771	0.843	0.801	0.781
	1904	2604	2112	3227	3062	3584	0.731	0.654	0.854
	190	845	181	167	452	1068	0.225	1.084	0.423
	1760	1873	1657	1697	1636	1475	0.940	0.976	1.109
	600	1651	1421	1810	1895	1768	0.363	0.785	1.072
	1352	1385	1847	2272	2075	2059	0.976	0.813	1.008
	1898	1862	2014	2454	2135	2099	1.019	0.821	1.017
MEAN	1252	1608	1453	1806	1704	1834	0.728	0.802	0.933
SD.	829	711	777	830	764	830	0.301	0.194	0.201

QUADRICEPS AVERAGE POWER : MECLOFENAMATE GROUP

G.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	329	352	302	321	302	354	0.935	0.941	0.853
	287	243	272	289	250	250	1.181	0.941	1.000
	272	291	239	217	247	75	0.935	1.101	3.293
	160	205	205	197	204	228	0.780	1.041	0.895
	214	210	158	191	237	265	1.019	0.827	0.894
	171	176	159	179	171	180	0.972	0.888	0.950
	184	222	184	208	199	239	0.829	0.885	0.833
	169	145	182	151	212	160	1.166	1.205	1.325
	153	220	196	167	236	237	0.695	1.174	0.996
	222	280	246	236	241	238	0.793	1.042	1.013
	170	234	195	215	216	198	0.726	0.907	1.091
	276	302	317	310	312	295	0.914	1.023	1.058
	279	239	237	212	278	235	1.167	1.118	1.183
MEAN	222	240	222	223	239	227	0.932	1.007	1.183
SD.	57	53	49	51	39	64	0.160	0.115	0.623

QUADRICEPS AVERAGE POWER : PLACEBO GROUP

G.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	195	226	178	183	216	199	0.863	0.973	1.085
	260	288	251	255	277	316	0.903	0.984	0.877
	256	317	312	334	315	341	0.808	0.934	0.924
	141	139	128	138	158	131	1.014	0.928	1.206
	296	270	298	271	301	285	1.096	1.100	1.056
	209	237	238	248	252	261	0.882	0.960	0.966
	126	212	167	176	208	250	0.594	0.949	0.832
	226	259	273	274	258	262	0.873	0.996	0.985
	191	201	240	206	223	224	0.950	1.165	0.996
	167	233	165	222	188	192	0.717	0.743	0.979
	112	121	117	127	137	130	0.926	0.921	1.054
	338	332	371	294	381	322	1.018	1.262	1.183
	302	290	314	306	335	323	1.041	1.026	1.037
	281	344	336	341	371	363	0.817	0.985	1.022
MEAN	221	248	242	241	259	257	0.893	0.995	1.014
SD.	68	64	77	66	73	72	0.129	0.117	0.100

QUADRICEPS AVERAGE POWER : DICLOFENAC GROUP							RATIO		
Q.A.F.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1.	R.D3	R.D7.
CYBEX	349	396	367	413	398	407	0.881	0.889	0.978
	124	150	146	130	150	152	0.827	1.123	0.987
	198	190	191	189	205	193	1.042	1.011	1.062
	113	136	111	130	120	135	0.831	0.854	0.889
	385	340	369	347	364	347	1.074	1.063	1.049
	195	140	180	175	241	206	1.393	1.029	1.170
	313	346	338	381	286	289	0.905	0.887	0.990
	213	214	227	230	251	241	0.995	0.987	1.041
	164	197	187	189	183	194	0.832	0.989	0.943
	229	224	247	215	261	279	1.022	1.149	0.935
	327	312	335	345	366	419	1.048	0.971	0.874
	249	318	241	299	286	310	0.783	0.806	0.923
	129	170	134	150	142	153	0.759	0.893	0.928
	257	299	266	284	306	252	0.860	0.937	1.214
	269	318	298	341	318	340	0.846	0.874	0.935
	360	291	321	321	342	328	0.893	1.000	1.043
	246	309	299	307	286	291	0.796	0.974	0.983
MEAN	235	256	250	262	265	267	0.929	0.967	0.997
SD.	74	80	80	89	80	84	0.151	0.091	0.090

HAMSTRING AVERAGE POWER : MECLOFENAMATE GROUP							RATIO		
H.A.F.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1.	R.D3	R.D7.
CYBEX	183	205	168	189	214	220	0.893	0.889	0.973
	154	142	186	210	170	169	1.085	0.886	1.006
	124	149	171	128	171	74	0.832	1.336	2.311
	74	139	116	150	163	134	0.532	0.773	1.216
	109	92	108	111	138	139	1.185	0.973	0.993
	143	189	157	191	158	199	0.757	0.822	0.794
	128	146	117	138	125	126	0.877	0.848	0.992
	147	85	154	125	161	174	1.729	1.232	0.925
	106	154	108	158	162	178	0.688	0.684	0.910
	115	151	140	154	132	130	0.762	0.909	1.015
	35	157	38	128	56	116	0.223	0.297	0.483
	87	188	105	189	127	161	0.463	0.556	0.789
	166	151	118	132	184	198	1.099	0.894	0.929
MEAN	121	150	130	154	151	155	0.856	0.854	1.026
SD.	39	33	37	30	36	39	0.361	0.253	0.405

HAMSTRING AVERAGE POWER : PLACEBO GROUP

H.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	101	160	72	138	123	142	0.631	0.522	0.866
	108	78	148	120	152	142	1.385	1.233	1.070
	13	234	140	275	149	278	0.056	0.509	0.536
	73	111	96	96	103	95	0.658	1.000	1.084
	224	159	229	161	236	165	1.409	1.422	1.430
	116	102	138	142	126	169	1.137	0.972	0.746
	140	187	160	201	201	232	0.749	0.796	0.866
	71	188	113	195	123	164	0.378	0.579	0.750
	167	167	194	162	210	180	1.000	1.198	1.167
	79	150	95	140	101	148	0.527	0.679	0.682
	37	77	60	81	78	89	0.481	0.741	0.876
	144	239	234	220	231	255	0.603	1.064	0.906
	194	282	261	276	282	296	0.688	0.946	0.953
	132	232	119	227	214	264	0.569	0.524	0.811
MEAN	114	169	147	174	166	187	0.733	0.870	0.910
SD.	56	61	60	59	60	64	0.365	0.284	0.216

HAMSTRING AVERAGE POWER : DICLOFENAC GROUP

H.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	53	195	70	215	210	270	0.272	0.326	0.778
	23	72	70	80	75	53	0.319	0.875	1.415
	71	81	79	81	85	82	0.877	0.975	1.037
	23	41	35	39	40	42	0.561	0.897	0.952
	281	261	272	241	257	261	1.077	1.129	0.985
	105	91	6	110	129	130	1.154	0.055	0.992
	142	185	180	194	158	156	0.768	0.928	1.013
	79	130	92	148	159	164	0.608	0.622	0.970
	106	107	120	110	119	105	0.991	1.091	1.133
	179	183	193	221	230	196	0.978	0.873	1.173
	236	206	215	223	183	231	1.146	0.964	0.792
	178	238	189	281	274	313	0.748	0.673	0.875
	18	77	16	77	39	96	0.234	0.208	0.406
	175	183	174	171	175	146	0.956	1.018	1.199
	58	147	129	175	178	180	0.395	0.737	0.989
	131	172	191	218	210	206	0.762	0.876	1.019
	191	198	193	234	206	206	0.965	0.825	1.000
MEAN	121	151	131	166	160	167	0.753	0.769	0.984
SD.	76	62	75	69	69	75	0.297	0.298	0.206

QUADRICEPS PEAK T.A.E. :MECLOFENAMATE GROUP

Q.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	51.23	56.52	51.61	54.62	55.56	56.10	0.906	0.945	0.990
	42.19	32.27	35.49	32.52	36.20	34.52	1.307	1.091	1.049
	40.01	38.01	39.91	32.46	52.41	44.93	1.053	1.230	1.166
	22.88	27.84	28.62	25.86	20.31	26.94	0.822	1.107	0.754
	33.34	31.25	20.52	29.15	30.27	33.18	1.067	0.704	0.912
	22.78	19.55	20.48	23.73	23.26	23.21	1.165	0.863	1.002
	25.06	20.32	21.86	26.14	25.49	30.11	1.233	0.836	0.847
	22.47	25.42	28.44	38.27	41.80	34.13	0.884	0.743	1.225
	33.81	33.27	45.49	39.64	45.07	56.71	1.016	1.148	0.795
	41.65	42.28	41.93	37.98	35.43	36.82	0.985	1.104	0.962
	22.89	35.91	30.18	36.59	33.42	37.52	0.637	0.825	0.891
	55.34	48.64	49.17	49.45	59.72	45.20	1.138	0.994	1.321
	43.31	40.90	41.49	30.12	44.06	35.71	1.059	1.377	1.234
MEAN	35	35	35	35	39	38	1.021	0.997	1.011
SD.	11	10	10	9	12	10	0.172	0.192	0.172

QUADRICEPS PEAK T.A.E. : PLACEBO GROUP

Q.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	24.82	28.58	22.93	26.94	27.00	30.53	0.868	0.851	0.884
	34.57	34.57	37.84	37.92	37.25	39.46	1.000	0.998	0.944
	29.27	44.98	49.56	47.08	50.16	48.91	0.651	1.053	1.026
	19.77	24.65	24.14	22.49	23.68	23.48	0.802	1.073	1.009
	23.48	29.54	24.37	29.59	24.96	30.12	0.795	0.824	0.829
	27.83	33.68	32.17	29.57	33.74	35.17	0.826	1.088	0.959
	17.89	21.60	17.28	24.89	19.55	24.94	0.828	0.694	0.784
	29.76	28.97	36.31	30.90	33.90	31.58	1.027	1.175	1.073
	24.38	25.33	28.77	24.67	31.47	29.28	0.962	1.166	1.075
	35.76	42.39	39.83	40.28	13.79	49.21	0.844	0.989	0.280
	11.98	26.41	18.89	26.90	28.29	23.16	0.454	0.702	1.222
	48.51	50.60	67.25	55.77	78.66	51.67	0.959	1.206	1.522
	46.84	49.97	47.50	67.89	70.89	73.42	0.937	0.700	0.966
	44.93	48.50	55.41	47.51	56.97	58.36	0.926	1.166	0.976
MEAN	30	35	36	37	38	39	0.849	0.977	0.968
SD.	11	10	14	13	19	14	0.145	0.182	0.258

QUADRICEPS PEAK T.A.E. : DICLOFENAC GROUP

Q.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	51.07	56.62	64.68	58.01	55.16	55.17	0.902	1.115	1.000
	18.75	28.74	25.44	25.01	24.12	25.41	0.652	1.017	0.949
	22.67	22.61	25.00	22.51	25.98	23.58	1.003	1.111	1.102
	12.47	17.19	17.00	18.41	18.02	19.01	0.725	0.923	0.948
	32.34	29.57	36.00	33.88	38.03	32.91	1.094	1.063	1.156
	24.98	20.59	14.85	11.93	21.08	20.65	1.213	1.245	1.021
	31.12	40.00	34.41	37.34	31.72	33.15	0.778	0.922	0.957
	23.67	30.19	28.25	26.08	29.24	25.41	0.784	1.083	1.151
	20.90	27.49	25.58	27.52	19.65	26.21	0.760	0.930	0.750
	55.85	49.58	56.31	37.52	62.58	61.23	1.126	1.501	1.022
	75.85	55.00	81.36	71.91	91.42	91.55	1.379	1.131	0.999
	45.77	56.98	43.54	53.62	55.77	54.87	0.803	0.812	1.016
	23.52	31.49	21.28	26.63	23.82	23.88	0.747	0.799	0.997
	38.59	47.33	41.90	46.72	41.18	36.58	0.815	0.897	1.126
	43.46	39.10	53.25	55.15	43.84	55.51	1.112	0.965	0.790
	36.39	47.46	42.55	45.21	43.62	45.26	0.767	0.941	0.964
	43.68	48.71	67.58	73.02	65.12	66.00	0.897	0.925	0.987
MEAN	35	38	40	39	41	41	0.915	1.022	0.996
SD.	16	13	19	18	19	20	0.198	0.166	0.106

HAMSTRING PEAK T.A.E. : MECLOFENAMATE GROUP

Q.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1.	R.D3	R.D7.
CYBEX	28.83	32.63	27.77	28.35	31.36	34.42	0.884	0.980	0.911
	15.05	14.23	15.64	19.23	19.09	19.81	1.058	0.813	0.964
	20.73	18.81	23.70	18.56	25.86	29.60	1.102	1.277	0.874
	13.52	18.38	18.52	21.45	29.31	26.86	0.736	0.863	1.091
	16.11	18.73	21.34	25.85	24.27	29.29	0.860	0.826	0.829
	18.01	23.12	15.91	21.86	18.86	22.24	0.779	0.728	0.848
	13.31	14.15	15.00	15.56	12.48	17.69	0.941	0.964	0.705
	19.68	16.98	35.86	12.27	33.46	40.62	1.159	2.923	0.824
	21.14	28.53	39.43	37.52	19.28	49.51	0.741	1.051	0.389
	19.36	21.59	21.55	20.74	19.71	20.10	0.897	1.039	0.981
	7.78	26.48	8.38	23.16	10.68	16.43	0.294	0.362	0.650
	15.47	27.68	16.83	30.51	22.66	29.72	0.559	0.552	0.762
	23.75	21.20	19.21	17.94	29.64	23.48	1.120	1.071	1.262
MEAN	18	22	21	23	23	28	0.856	1.034	0.853
SD.	5	5	8	6	7	9	0.234	0.591	0.205

HAMSTRING PEAK T.A.E. : PLACEBO GROUP

							RATIO		
P.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1.	R.D3	R.D7.
CYBEX	10.51	15.17	11.47	17.59	15.55	15.25	0.693	0.652	1.020
	15.09	11.17	16.42	13.33	17.71	16.89	1.351	1.232	1.049
	7.74	28.90	19.51	28.46	23.69	29.00	0.268	0.686	0.817
	4.26	18.52	18.39	20.22	6.82	16.72	0.230	0.909	0.408
	36.20	27.73	36.81	28.75	37.51	31.67	1.305	1.280	1.184
	14.97	17.09	27.87	28.56	15.21	32.14	0.876	0.976	0.473
	25.44	24.55	23.73	23.67	24.07	28.02	1.036	1.003	0.859
	11.77	27.08	15.76	31.40	16.51	26.29	0.435	0.502	0.628
	20.87	21.08	22.34	20.02	20.66	19.65	0.990	1.116	1.051
	23.60	30.78	23.53	34.79	15.28	34.59	0.767	0.676	0.442
	10.09	12.91	16.44	21.08	19.86	22.27	0.782	0.780	0.892
	22.70	32.42	32.71	30.59	32.21	35.24	0.700	1.069	0.914
	30.38	34.65	34.93	41.03	41.42	42.69	0.877	0.851	0.970
	24.12	31.69	25.60	32.58	32.61	36.49	0.761	0.786	0.894
MEAN	18	24	23	27	23	28	0.791	0.894	0.829
SD.	9	8	7	7	9	8	0.319	0.222	0.238

HAMSTRING PEAK T.A.E. : DICLOFENAC GROUP

							RATIO		
H.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	R.D1.	R.D3	R.D7.
	16.20	31.17	14.23	30.15	28.13	35.27	0.520	0.472	0.798
	7.65	11.08	9.73	14.48	12.57	10.51	0.690	0.672	1.196
	14.32	14.91	15.01	14.99	15.90	15.49	0.960	1.001	1.026
	0.01	9.87	8.89	12.16	8.96	12.36	0.001	0.731	0.725
	40.75	38.51	35.05	37.12	38.57	36.25	1.058	0.944	1.064
	13.24	16.92	11.18	10.50	12.81	12.26	0.783	1.065	1.045
	22.10	26.36	21.23	22.22	21.24	20.66	0.838	0.955	1.028
	9.07	14.58	12.34	14.33	17.80	17.95	0.622	0.861	0.992
	19.77	16.72	25.34	17.51	22.33	16.64	1.182	1.447	1.342
	37.29	36.60	38.90	45.25	48.69	40.95	1.019	0.860	1.189
	45.65	26.54	47.87	43.27	52.53	60.52	1.720	1.106	0.868
	31.16	37.84	27.82	31.03	38.79	40.05	0.823	0.897	0.969
	5.40	14.16	4.44	12.23	6.61	15.87	0.381	0.363	0.417
	25.08	31.94	25.79	27.63	23.84	21.54	0.785	0.933	1.107
	12.59	26.10	27.98	26.25	26.06	32.56	0.482	1.066	0.800
	22.22	33.26	27.76	32.39	32.16	36.37	0.668	0.857	0.884
	26.46	28.44	29.41	32.50	28.15	22.84	0.930	0.905	1.232
MEAN	21	24	23	25	26	26	0.792	0.890	0.981
SD.	12	9	12	11	13	13	0.360	0.239	0.215

TOTAL PAIN VALUES : MECLOFENAMATE GROUP

VAS	D1	D3	D7	
	10	2	0	
	11	4	2	
	26	12	6	
	26	10	4	
	23	14	3	
	29	32	12	
	14	8	13	
	29	15	6	
	32	13	3	
	38	24	23	
	44	31	18	
	27	22	9	
	18	12	3	
	24.38	15.31	7.85	MEAN
	8.97	9.03	6.50	SD.

TOTAL PAIN VALUES : PLACEBO GROUP

VAS	D1	D3	D7	
	26	6	4	
	5	0	1	
	46	19	1	
	10	3	0	
	5	1	2	
	24	21	5	
	17	12	5	
	36	17	4	
	33	16	8	
	38	25	8	
	37	26	12	
	32	11	0	
	21	5	2	
	25	14	2	
	25.36	12.57	3.86	MEAN
	12.23	8.31	3.38	SD.

TOTAL PAIN VALUES : DICLOFENAC GROUP

VAS	D1	D3	D7
	44	28	15
	29	16	5
	42	34	7
	27	17	5
	10	13	3
	20	4	3
	19	10	12
	24	10	4
	15	6	4
	29	21	19
	8	15	27
	37	28	3
	37	31	25
	27	23	4
	24	15	4
	27	9	5
	27	23	4
	25.82	17.92	8.76	MEAN
	9.96	8.68	7.70	SD.

SWELLING MEASUREMENTS : MECLOFENAMATE GROUP

cm	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	65	65	64	64	64	64	1.000	1.000	1.000
	43	44	42	42	41	42	0.977	1.000	0.976
	55	54	54	54	53	54	1.019	1.000	0.981
	59	59	59	59	59	59	1.000	1.000	1.000
	50	50	54	54	53	53	1.000	1.000	1.000
	41	39	42	41	41	41	1.051	1.024	1.000
	55	55	55	55	55	55	1.000	1.000	1.000
	52	53	52	53	53	54	0.981	0.981	0.981
	53	51	52	53	52	52	1.039	0.981	1.000
	54	53	54	53	54	54	1.019	1.019	1.000
	58	57	58	57	59	59	1.018	1.018	1.000
	52	52	52	52	52	52	1.000	1.000	1.000
	62	62	62	62	62	62	1.000	1.000	1.000
MEAN	53.77	53.38	53.85	53.77	53.69	53.92	1.008	1.002	0.995
SD.	6.46	6.63	6.24	6.31	6.58	6.43	0.020	0.012	0.009

SWELLING MEASUREMENTS : PLACEBO GROUP

cm	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	52	51	50	52	51	53	1.020	0.962	0.962
	58	58	57	57	57	57	1.000	1.000	1.000
	54	53	57	57	57	57	1.019	1.000	1.000
	45	45	45	45	47	47	1.000	1.000	1.000
	47	48	47	47	47	47	0.979	1.000	1.000
	54	52	53	52	52	52	1.038	1.019	1.000
	53	55	53	54	55	55	0.964	0.981	1.000
	53	54	55	54	54	54	0.981	1.019	1.000
	53	52	56	56	56	57	1.019	1.000	0.982
	62	60	62	60	62	60	1.033	1.033	1.033
	41	42	42	43	42	44	0.976	0.977	0.955
	58	60	58	60	59	60	0.967	0.967	0.983
	57	56	57	56	57	57	1.018	1.018	1.000
	59	58	58	58	58	58	1.017	1.000	1.000
MEAN	53.29	53.14	53.57	53.64	53.86	54.14	1.002	0.998	0.994
SD.	5.53	5.19	5.46	5.15	5.29	4.84	0.024	0.020	0.018

SWELLING MEASUREMENTS : DICLOFENAC GROUP

cm	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	RATIO R.D1	R.D3	R.D7
	59	57	59	57	57	57	1.035	1.035	1.000
	53	52	53	53	53	53	1.019	1.000	1.000
	48	46	47	47	47	47	1.043	1.000	1.000
	47	46	46	46	46	46	1.022	1.000	1.000
	54	54	55	54	54	54	1.000	1.019	1.000
	70	70	69	69	69	69	1.000	1.000	1.000
	60	61	60	61	60	60	0.984	0.984	1.000
	46	45	51	51	49	49	1.022	1.000	1.000
	51	51	51	51	51	51	1.000	1.000	1.000
	61	59	60	58	60	60	1.034	1.034	1.000
	57	58	56	55	58	56	0.983	1.018	1.036
	42	42	42	43	42	43	1.000	0.977	0.977
	38	38	39	39	38	39	1.000	1.000	0.974
	46	46	46	46	46	46	1.000	1.000	1.000
	59	60	59	59	59	60	0.983	1.000	0.983
	55	55	55	55	55	55	1.000	1.000	1.000
	55	55	55	55	55	55	1.000	1.000	1.000
MEAN	53.00	52.65	53.12	52.88	52.88	52.94	1.007	1.004	0.998
SD.	7.70	7.85	7.30	7.06	7.44	7.22	0.018	0.015	0.013

HAMSTRING INJURY DATA

QUADRICEPS PEAK TORQUE : MECLOFENAMATE GROUP

Q.P.M. AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	% CHANGE DAY1	DAY3	DAY7	@LOG((x+0.5)/(100.5-x)+2 DAY1	DAY3	DAY7
280	315	279	314	310	302	-11	-11	3	0.28	0.28	0.31
165	231	195	212	189	226	-29	-13	-16	0.25	0.28	0.27
237	221	193	187	214	187	7	3	14	0.32	0.31	0.34
149	172	174	161	186	167	-13	8	11	0.28	0.32	0.33
207	231	224	236	278	274	-10	-5	1	0.28	0.29	0.31
163	182	192	201	187	194	-10	-9	-4	0.28	0.28	0.29
174	213	167	197	182	207	-18	-15	-12	0.27	0.27	0.28
193	241	207	251	250	262	-20	-18	-5	0.26	0.27	0.29
229	245	225	254	252	252	-7	-11	0	0.29	0.28	0.30
181	187	176	171	138	152	-3	3	-9	0.30	0.31	0.28
139	209	176	197	175	197	-33	-11	-11	0.24	0.28	0.28
225	256	207	254	233	273	-12	-19	-15	0.28	0.27	0.27
196	100	189	207	214	222	96	-9	-4	1.37	0.28	0.29
MEAN 195	216	199	219	216	224				0.361	0.286	0.296
SD. 38	49	39	40	45	44				0.292	0.016	0.020

QUADRICEPS PEAK TORQUE : PLACEBO GROUP

Q.P.P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	% CHANGE DAY1	DAY3	DAY7	@LOG((x+0.5)/(100.5-x)+2 DAY1	DAY3	DAY7
	131	128	128	128	134	122	2	0	10	0.31	0.30	0.33
	183	199	162	188	181	204	-8	-14	-11	0.29	0.27	0.28
	223	208	252	227	257	231	7	11	11	0.32	0.33	0.33
	184	167	149	161	167	169	10	-7	-1	0.33	0.29	0.30
	236	221	266	251	256	245	7	6	4	0.32	0.32	0.31
	205	235	214	217	248	236	-13	-1	5	0.28	0.30	0.31
	198	224	235	254	245	251	-12	-7	-2	0.28	0.29	0.30
	237	243	214	224	220	216	-2	-4	2	0.30	0.29	0.31
	256	229	237	186	243	267	12	27	-9	0.33	0.38	0.28
	224	287	214	228	222	232	-22	-6	-4	0.26	0.29	0.29
	141	148	151	152	152	146	-5	-1	4	0.29	0.30	0.31
	154	295	324	292	282	288	-48	11	-2	0.23	0.33	0.30
	292	251	185	250	299	265	16	-26	13	0.34	0.25	0.33
	215	273	266	250	253	281	-21	6	-10	0.26	0.32	0.28
MEAN	196	213	205	206	216	217				0.294	0.304	0.304
SD.	39	41	49	39	42	40				0.031	0.028	0.017

QUADRICEPS PEAK TORQUE : DICLOFENAC GROUP

O.P.D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	237	269	241	238	208	234
	159	191	153	165	180	180
	148	179	123	172	153	164
	121	134	149	153	148	160
	244	237	236	241	251	256
	207	180	198	172	186	156
	245	236	260	267	267	259
	168	201	197	207	167	168
	153	169	195	183	183	199
	229	270	240	251	263	283
	237	255	267	274	286	281
	226	256	235	254	247	242
	100	158	121	139	145	150
	215	242	210	216	224	218
	267	262	320	319	299	317
	193	230	188	228	196	218
	232	257	261	271	236	235
MEAN	160	177	172	178	174	175
SD.	44	39	47	47	46	49

% CHANGE

DAY1	DAY3	DAY7
-12	1	-11
-17	-7	0
-17	-28	-7
-10	-3	-8
3	-2	-2
15	15	19
-14	-3	3
-16	-5	-1
-9	7	-8
-15	-4	-7
-7	-3	2
-8	-7	2
-37	-13	-3
-11	-3	3
2	0	-6
-16	-18	-10
-10	-4	0

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.30	0.28
0.27	0.29	0.30
0.27	0.25	0.29
0.28	0.30	0.29
0.31	0.30	0.30
0.34	0.34	0.35
0.27	0.30	0.31
0.27	0.29	0.30
0.28	0.32	0.29
0.27	0.29	0.29
0.29	0.30	0.31
0.29	0.29	0.31
0.24	0.28	0.30
0.28	0.30	0.31
0.31	0.30	0.29
0.27	0.27	0.28
0.28	0.29	0.30
0.282	0.294	0.299
0.020	0.018	0.016

HAMSTRING PEAK TORQUE : MECLOFENAMATE GROUP

H.P.M.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	189	196	188	199	204	206
	71	119	94	120	100	120
	119	80	135	82	141	123
	76	137	84	130	170	156
	93	109	104	95	132	129
	75	134	88	140	113	137
	98	118	114	121	110	113
	71	149	122	155	148	165
	89	122	103	134	138	138
	74	132	103	105	94	89
	28	104	36	92	36	98
	45	161	58	149	73	166
	99	118	99	106	128	123
MEAN	87	129	102	125	122	136
SD.	37	27	35	30	41	30

% CHANGE

DAY1	DAY3	DAY7
-4	-6	-1
-40	-22	-17
49	65	15
-45	-35	9
-15	9	2
-44	-37	-18
-17	-6	-3
-52	-21	-10
-27	-23	0
-44	-2	6
-73	-61	-63
-72	-61	-56
-16	-7	4

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.29	0.29	0.30
0.23	0.26	0.27
0.47	0.58	0.34
0.23	0.24	0.32
0.27	0.32	0.31
0.23	0.24	0.27
0.27	0.29	0.30
0.22	0.26	0.28
0.25	0.26	0.30
0.23	0.30	0.31
0.20	0.21	0.21
0.20	0.21	0.22
0.27	0.29	0.31
0.260	0.289	0.287
0.108	0.115	0.082

HAMSTRING PEAK TORQUE : PLACEBO GROUP

H.P.P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	50	85	46	80	55	65
	103	85	104	89	116	100
	37	111	80	119	110	117
	107	111	100	111	113	111
	157	155	156	155	160	157
	132	140	136	149	161	172
	71	129	80	134	100	155
	75	107	96	113	110	126
	94	130	122	122	148	172
	61	137	69	126	83	142
	73	85	85	107	103	99
	80	169	173	149	132	142
	86	153	130	161	182	186
	79	143	104	165	139	181
MEAN	87	124	106	127	122	138
SD.	32	27	33	25	33	35

% CHANGE

DAY1	DAY3	DAY7
-41	-43	-15
21	17	16
-67	-33	-6
-4	-10	2
1	1	2
-6	-9	-6
-45	-40	-35
-30	-15	-13
-28	0	-14
-55	-45	-42
-14	-21	4
-53	16	-7
-38	-19	-2
-45	-37	-23

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.23	0.23	0.27
0.36	0.34	0.34
0.21	0.24	0.29
0.29	0.28	0.31
0.30	0.30	0.31
0.29	0.28	0.29
0.23	0.23	0.24
0.25	0.27	0.28
0.25	0.30	0.27
0.22	0.23	0.23
0.27	0.26	0.31
0.22	0.34	0.29
0.24	0.27	0.30
0.23	0.24	0.26
0.257	0.274	0.285
0.093	0.077	0.076

HAMSTRING PEAK TORQUE : DICLOFENAC GROUP

H.P.D.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	56	169	70	176	120	165
	46	108	71	108	81	113
	26	113	43	107	69	94
	71	81	71	84	89	85
	161	159	159	157	160	160
	80	92	91	84	106	98
	118	156	134	168	130	163
	52	118	89	118	110	119
	91	113	114	113	119	117
	119	137	141	137	144	164
	159	171	149	169	159	174
	125	175	116	161	139	165
	20	76	15	67	19	75
	87	118	93	113	102	114
	74	138	123	175	131	162
	90	136	105	138	108	136
	121	117	137	141	169	144
MEAN	88	128	101	130	115	132
SD.	40	30	38	33	36	32

% CHANGE

DAY1	DAY3	DAY7
-67	-60	-27
-57	-34	-28
-77	-60	-27
-12	-15	5
1	1	0
-13	8	8
-24	-20	-20
-56	-25	-8
-19	1	2
-13	3	-12
-7	-12	-9
-29	-28	-16
-74	-78	-75
-26	-18	-11
-46	-30	-19
-34	-24	-21
3	-3	17

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.21	0.21	0.25
0.21	0.24	0.25
0.20	0.21	0.25
0.28	0.27	0.31
0.30	0.30	0.30
0.28	0.32	0.32
0.26	0.26	0.26
0.22	0.26	0.29
0.27	0.30	0.31
0.28	0.31	0.28
0.29	0.28	0.28
0.25	0.25	0.27
0.20	0.20	0.20
0.25	0.27	0.28
0.23	0.25	0.27
0.24	0.26	0.26
0.31	0.30	0.35
0.251	0.264	0.279
0.035	0.035	0.033

QUADRICEPS TOTAL WORK : MECLOFENAMATE GROUP

Q.E.M. AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
3503	3610	3402	3606	3314	3779
2956	2506	2994	3293	2814	2947
2673	2652	2561	2352	2638	1989
1744	2232	2191	2125	2011	2384
2336	2269	1676	2033	1913	2897
2142	2106	1987	2126	2048	2115
1916	2381	1945	2152	2062	2394
1628	2058	1679	2196	1907	2403
1920	2408	2222	2065	2503	2633
2410	2811	2511	2369	2329	2170
1705	2397	2360	2353	2435	2264
2981	3279	3320	3493	3500	3322
2715	2621	2461	2436	2838	2676
MEAN 2556	2564	2401	2508	2486	2613
SD. 559	432	544	541	501	493

% CHANGE

DAY1	DAY3	DAY7
-3	-6	-12
18	-9	-5
1	9	33
-22	3	-16
3	-18	-34
2	-7	-3
-20	-14	-14
-21	-24	-21
-20	9	-5
-14	6	7
-29	0	8
-9	-5	5
4	1	6

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.30	0.29	0.28
0.35	0.28	0.29
0.30	0.32	0.40
0.26	0.31	0.27
0.31	0.27	0.24
0.31	0.29	0.30
0.27	0.27	0.27
0.26	0.26	0.26
0.26	0.32	0.29
0.27	0.32	0.32
0.25	0.30	0.32
0.28	0.29	0.31
0.31	0.30	0.32
0.287	0.295	0.298
0.101	0.078	0.084

QUADRICEPS TOTAL WORK : PLACEBO GROUP

Q.E.P. AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
2092	2494	1869	1899	2128	2009
2873	2951	2654	2867	2894	3192
2117	3274	2964	3179	2971	3200
1721	1830	1559	1647	1912	1739
3482	3037	3512	3120	3535	3296
2646	2799	2919	2869	2941	2974
1477	2535	2162	2139	2562	2490
2590	2928	3230	3130	3095	3215
2350	2456	2998	2711	2786	2724
2065	2756	2198	2796	2320	2229
1405	1399	1414	1489	1639	1459
2831	3430	3816	2893	4376	3774
3597	3088	3521	3057	3793	3684
3244	3631	3756	3752	4021	3871
MEAN 2464	2758	2755	2682	2927	2847
SD. 674	577	771	624	770	736

% CHANGE

DAY1	DAY3	DAY7
-16	-2	6
-3	-7	-9
-35	-7	-7
-6	-5	10
15	13	7
-5	2	-1
-42	1	3
-12	3	-4
-4	11	2
-25	-21	4
0	-5	12
-17	32	16
16	15	3
-11	0	4

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.27	0.30	0.32
0.30	0.29	0.28
0.24	0.29	0.29
0.29	0.29	0.33
0.34	0.33	0.32
0.29	0.31	0.30
0.23	0.30	0.31
0.28	0.31	0.29
0.29	0.33	0.31
0.26	0.26	0.31
0.30	0.29	0.33
0.27	0.39	0.34
0.34	0.34	0.31
0.28	0.30	0.31
0.285	0.309	0.310
0.098	0.083	0.079

QUADRICEPS TOTAL WORK : DICLOFENAC GROUP

Q.E.D.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	3158	3133	3589	3631	3671	3738
	1631	1715	1665	1553	1760	1866
	2316	2296	2285	2239	2204	2197
	1345	1671	1405	1561	1519	1675
	3973	3681	4049	3850	3817	3797
	2012	1424	2432	2241	2802	2329
	3552	3907	3784	4336	3334	3221
	2394	2270	2350	2456	2544	2620
	1465	1743	1695	1796	1619	1831
	2705	2648	2632	2467	2921	2911
	3454	3405	3491	3501	3681	4098
	2937	3835	2912	3783	3332	3951
	1403	1858	1548	1660	1597	1725
	2932	3225	2848	2879	3057	2611
	2845	3827	3351	3588	3634	3523
	2518	2694	3189	3313	3325	3314
	2589	3162	3456	3647	3046	3114
MEAN	2537	2735	2746	2853	2815	2854
SD.	756	832	809	889	776	797

% CHANGE

DAY1	DAY3	DAY7
1	-1	-2
-5	7	-6
1	2	0
-20	-10	-9
8	5	1
41	9	20
-9	-13	4
5	-4	-3
-16	-6	-12
2	7	0
1	0	-10
-23	-23	-16
-24	-7	-7
-12	-1	17
-26	-7	3
-7	-4	0
-18	-5	-2

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.30	0.30	0.30
0.29	0.32	0.29
0.30	0.31	0.30
0.27	0.28	0.28
0.32	0.31	0.30
0.43	0.32	0.35
0.28	0.28	0.31
0.31	0.29	0.30
0.27	0.29	0.28
0.31	0.32	0.30
0.31	0.30	0.28
0.26	0.26	0.27
0.26	0.29	0.29
0.28	0.30	0.34
0.26	0.29	0.31
0.29	0.29	0.30
0.27	0.29	0.30
0.294	0.297	0.301
0.040	0.016	0.021

HAMSTRING TOTAL WORK : MECLOFENAMATE GROUP

H.E.M.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	1962	2121	1915	2134	2363	2360
	1604	1483	2066	2413	1932	2005
	1233	1380	1849	1402	1849	1952
	782	1509	1242	1653	1626	1416
	1138	941	1128	1119	1163	1474
	1814	2313	2020	2539	2032	2545
	1450	1546	1364	1518	1456	1240
	1144	2040	1790	2181	2158	2243
	1358	2004	1410	1911	1975	2193
	1183	1528	1379	1497	1241	1212
	349	1579	454	1349	625	1269
	924	1949	1096	2027	1387	1721
	1602	1552	1236	1383	1840	2008
MEAN	1273	1688	1458	1779	1665	1818
SD.	419	359	440	432	458	441

% CHANGE

DAY1	DAY3	DAY7
-7	-10	0
8	-14	-4
-11	32	-5
-48	-25	15
21	1	-21
-22	-20	-20
-6	-10	17
-44	-18	-4
-32	-26	-10
-23	-8	2
-78	-66	-51
-53	-46	-19
3	-11	-8

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.29	0.28	0.30
0.32	0.27	0.29
0.28	0.39	0.29
0.23	0.26	0.34
0.36	0.30	0.26
0.26	0.26	0.26
0.29	0.28	0.35
0.23	0.27	0.29
0.25	0.25	0.28
0.26	0.29	0.31
0.19	0.21	0.22
0.22	0.23	0.27
0.31	0.28	0.29
0.268	0.275	0.289
0.100	0.082	0.080

HAMSTRING TOTAL WORK : PLACEBO GROUP

H.E.P. AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
1097	1775	770	1446	1219	1445
1209	816	1585	1365	1606	1445
114	2441	1345	2655	1444	2715
1085	1548	1292	1343	1491	1301
2548	1707	2442	1798	2336	1928
1394	1177	1613	1647	1407	1948
1768	2355	2065	2745	2533	2959
819	2134	1335	2252	1502	2041
2165	2291	2707	2214	2789	2382
1041	1894	1246	1940	1343	1959
463	989	672	989	911	1031
1301	2397	2283	2151	2547	2805
2087	2789	2843	2712	2984	3009
1365	2187	1252	2350	2263	2561
MEAN 1318	1893	1675	1972	1884	2109
SD. 635	569	661	539	639	624

% CHANGE

DAY1	DAY3	DAY7
-38	-47	-16
48	16	11
-95	-49	-47
-30	-4	15
49	36	21
18	-2	-28
-25	-25	-14
-62	-41	-26
-5	22	17
-45	-36	-31
-53	-32	-12
-46	6	-9
-25	5	-1
-38	-47	-12

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.24	0.23	0.27
0.47	0.34	0.33
0.18	0.22	0.23
0.25	0.29	0.34
0.47	0.41	0.36
0.35	0.30	0.25
0.26	0.26	0.27
0.21	0.23	0.25
0.29	0.36	0.34
0.23	0.24	0.25
0.22	0.25	0.28
0.23	0.32	0.28
0.26	0.31	0.30
0.24	0.23	0.28
0.277	0.285	0.288
0.123	0.089	0.081

HAMSTRING TOTAL WORK : DICLOFENAC GROUP

H.E.D. AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
493	1571	696	1924	1954	2503
232	774	789	949	826	620
278	955	559	942	862	906
382	495	256	496	313	518
3092	2854	3119	2806	2896	3016
1063	966	1362	1478	1480	1550
1695	2222	2053	2213	1860	1746
928	1351	1082	1726	1724	1984
974	974	1176	1206	1135	1083
2123	2194	2163	2580	2500	2430
2325	2759	2213	2763	2163	2771
1904	2604	2112	3227	3062	3584
190	845	181	167	452	1068
1760	1873	1657	1697	1636	1475
600	1651	1421	1810	1895	1768
1352	1385	1847	2272	2075	2059
1898	1862	2014	2454	2135	2099
MEAN 1252	1608	1453	1806	1704	1834
SD. 829	711	777	830	764	830

% CHANGE

DAY1	DAY3	DAY7
-69	-64	-22
-70	-17	33
-71	-41	-5
-23	-48	-40
8	11	-4
10	-8	-5
-24	-7	7
-31	-37	-13
0	-2	5
-3	-16	3
-16	-20	-22
-27	-35	-15
-78	8	-58
-6	-2	11
-64	-21	7
-2	-19	1
2	-18	2

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.20	0.21	0.26
0.20	0.27	0.40
0.20	0.23	0.29
0.26	0.22	0.24
0.32	0.33	0.29
0.33	0.29	0.29
0.26	0.29	0.32
0.25	0.24	0.28
0.30	0.30	0.31
0.30	0.27	0.31
0.27	0.26	0.26
0.25	0.24	0.27
0.20	0.32	0.21
0.29	0.30	0.33
0.21	0.26	0.32
0.30	0.27	0.30
0.31	0.27	0.31
0.261	0.269	0.294
0.044	0.032	0.040

QUADRICEPS AVERAGE POWER : MECLOFENAMATE GROUP

Q.A.P. CYBEX	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	329	352	302	321	302	354
	287	243	272	289	250	250
	272	291	239	217	247	175
	160	205	205	197	204	228
	214	210	158	191	237	265
	171	176	159	179	171	180
	184	222	184	208	199	239
	169	145	182	151	212	160
	153	220	196	167	236	237
	222	280	246	236	241	238
	170	234	195	215	216	198
	276	302	317	310	312	295
	279	239	237	212	278	235
MEAN	222	240	222	223	239	235
SD.	57	53	49	51	39	50

% CHANGE

DAY1	DAY3	DAY7
-7	-6	-15
18	-6	0
-7	10	41
-22	4	-11
2	-17	-11
-3	-11	-5
-17	-12	-17
17	21	33
-30	17	0
-21	4	1
-27	-9	9
-9	2	6
17	12	18

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.29	0.29	0.27
0.35	0.29	0.30
0.29	0.33	0.43
0.26	0.31	0.28
0.31	0.27	0.28
0.30	0.28	0.29
0.27	0.28	0.27
0.34	0.35	0.40
0.25	0.35	0.30
0.26	0.31	0.30
0.25	0.28	0.32
0.28	0.31	0.32
0.34	0.33	0.35
0.292	0.306	0.317
0.033	0.026	0.047

QUADRICEPS AVERAGE POWER : PLACEBO GROUP

Q.A.P. CYBEX	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	195	226	178	183	216	199
	260	288	251	255	277	316
	256	317	312	334	315	341
	141	139	128	138	158	131
	296	270	298	271	301	285
	209	237	238	248	252	261
	126	212	167	176	208	250
	226	259	273	274	258	262
	191	201	240	206	223	224
	167	233	165	222	188	192
	112	121	117	127	137	130
	338	332	371	294	381	322
	302	290	314	306	335	323
	281	344	336	341	371	363
MEAN	221	248	242	241	259	257
SD.	68	64	77	66	73	72

% CHANGE

DAY1	DAY3	DAY7
-14	-3	9
-10	-2	-12
-19	-7	-8
1	-7	21
10	10	6
-12	-4	-3
-41	-5	-17
-13	0	-2
-5	17	0
-28	-26	-2
-7	-8	5
2	26	18
4	3	4
-18	-1	2

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.30	0.32
0.28	0.30	0.28
0.27	0.29	0.29
0.31	0.29	0.35
0.32	0.33	0.31
0.28	0.29	0.29
0.23	0.29	0.27
0.28	0.30	0.30
0.29	0.34	0.30
0.25	0.26	0.30
0.29	0.29	0.31
0.31	0.37	0.35
0.31	0.31	0.31
0.27	0.30	0.31
0.283	0.303	0.307
0.023	0.027	0.023

QUADRICEPS AVERAGE POWER : DICLOFENAC GROUP

Q.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	349	396	367	413	398	407
	124	150	146	130	150	152
	199	190	191	189	205	193
	117	136	111	130	120	135
	365	340	369	347	364	347
	195	140	180	175	241	206
	313	346	338	381	286	289
	213	214	227	230	251	241
	164	197	187	189	183	194
	229	224	247	215	261	279
	327	312	335	345	366	419
	249	326	241	299	296	310
	129	170	134	150	142	153
	257	299	266	284	306	252
	289	318	298	341	318	340
	260	291	321	321	342	328
	246	294	299	307	296	291
MEAN	235	256	250	262	265	267
SD.	74	80	80	89	80	84

% CHANGE

DAY1	DAY3	DAY7
-12	-11	-2
-17	12	-1
4	1	6
-17	-15	-11
7	6	5
39	3	17
-10	-11	-1
0	-1	4
-17	-1	-6
2	15	-6
5	-3	-13
-22	-19	-8
-24	-11	-7
-14	-6	21
-15	-13	-6
-11	0	4
-20	-3	-2

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.28	0.30
0.27	0.33	0.30
0.31	0.30	0.32
0.27	0.27	0.28
0.32	0.32	0.31
0.42	0.31	0.34
0.28	0.28	0.30
0.30	0.30	0.31
0.27	0.30	0.29
0.31	0.34	0.29
0.31	0.30	0.28
0.26	0.27	0.29
0.26	0.28	0.29
0.27	0.29	0.36
0.27	0.28	0.29
0.28	0.30	0.31
0.26	0.30	0.30
0.291	0.296	0.303
0.038	0.019	0.021

HAMSTRING AVERAGE POWER : MECLOFENAMATE GROUP

H.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	193	205	168	189	214	220
	154	142	186	210	170	169
	124	149	171	128	171	174
	74	139	116	150	163	134
	109	92	108	111	138	139
	143	189	157	191	158	199
	129	146	117	138	125	126
	147	85	154	125	161	174
	106	154	108	158	162	178
	115	151	140	154	132	130
	35	157	38	128	56	116
	87	188	105	189	127	161
	166	151	118	132	184	198
MEAN	121	150	130	154	151	163
SD.	39	33	37	30	36	31

% CHANGE

DAY1	DAY3	DAY7
-11	-11	-3
8	-11	1
-17	34	-2
-47	-23	22
18	-3	-1
-24	-18	-21
-12	-15	-1
73	23	-7
-31	-32	-9
-24	-9	2
-78	-70	-52
-54	-44	-21
10	-11	-7

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.28	0.30
0.32	0.28	0.30
0.27	0.40	0.30
0.23	0.26	0.36
0.35	0.30	0.30
0.26	0.27	0.26
0.28	0.27	0.30
0.67	0.36	0.29
0.25	0.25	0.28
0.26	0.28	0.31
0.20	0.20	0.22
0.22	0.23	0.26
0.33	0.28	0.29
0.300	0.282	0.290
0.115	0.049	0.030

HAMSTRING AVERAGE POWER : PLACEBO GROUP

H.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	101	160	92	138	123	142
	138	78	148	120	152	142
	13	234	140	275	149	278
	73	111	96	96	103	95
	224	159	229	161	236	185
	116	302	138	142	126	169
	140	187	160	201	201	232
	71	188	113	195	123	164
	167	167	194	162	210	180
	79	150	95	140	101	148
	37	77	60	91	78	89
	144	239	234	220	231	255
	194	282	261	276	282	296
	152	232	119	227	214	264
MEAN	114	169	147	174	166	187
SD.	58	61	50	59	60	64

% CHANGE

DAY1	DAY3	DAY7
-37	-48	-13
38	23	7
-94	-49	-46
-34	0	8
41	42	43
14	-3	-25
-25	-20	-13
-62	-42	-25
0	20	17
-47	-32	-32
-52	-26	-12
-40	6	-9
-31	-5	-5
-43	-48	-19

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.24	0.23	0.28
0.42	0.36	0.32
0.18	0.22	0.23
0.24	0.30	0.32
0.43	0.44	0.44
0.34	0.30	0.26
0.26	0.26	0.28
0.21	0.23	0.26
0.30	0.35	0.34
0.23	0.25	0.25
0.22	0.26	0.29
0.24	0.32	0.28
0.25	0.29	0.29
0.23	0.23	0.27
0.270	0.288	0.291
0.073	0.061	0.051

HAMSTRING AVERAGE POWER : DICLOFENAC GROUP

H.A.P.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	53	195	70	215	210	270
	23	72	70	80	75	53
	71	81	79	81	85	92
	23	41	35	39	40	42
	281	261	272	241	257	261
	105	91	6	110	129	130
	142	135	180	194	158	156
	79	130	92	148	159	164
	106	107	120	110	119	105
	179	183	193	221	230	196
	236	206	215	223	183	231
	178	238	189	281	274	313
	18	77	16	77	39	96
	175	183	174	171	175	146
	58	147	129	175	178	180
	131	172	191	218	210	206
	191	198	193	234	206	206
MEAN	121	151	131	166	160	167
SD.	76	62	75	69	69	75

% CHANGE

DAY1	DAY3	DAY7
-73	-67	-22
-68	-13	42
-12	-2	4
-44	-10	-5
8	13	-2
15	-95	-1
-23	-7	1
-39	-38	-3
-1	9	13
-2	-13	17
15	-4	-21
-25	-33	-12
-77	-79	-59
-4	2	20
-61	-26	-1
-24	-12	2
-4	-18	0

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.20	0.20	0.26
0.20	0.28	0.43
0.28	0.30	0.31
0.23	0.28	0.29
0.32	0.33	0.30
0.34	0.18	0.30
0.26	0.29	0.30
0.24	0.24	0.30
0.30	0.32	0.33
0.30	0.28	0.35
0.34	0.29	0.26
0.26	0.25	0.28
0.20	0.19	0.21
0.29	0.31	0.35
0.21	0.25	0.30
0.26	0.28	0.31
0.29	0.27	0.30
0.265	0.267	0.305
0.046	0.042	0.045

QUADRICEPS PEAK T.A.E. :MECLOFENAMATE GROUP

Q.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	51.23	56.52	51.61	54.62	55.56	56.10
	42.19	32.27	35.49	32.52	36.20	34.52
	40.01	38.01	39.91	32.46	52.41	44.93
	22.38	27.84	28.62	25.86	20.31	26.94
	33.34	31.25	20.52	29.15	30.27	33.19
	22.78	19.55	20.48	23.73	23.26	23.21
	25.06	20.32	21.86	26.14	25.49	30.11
	22.47	25.42	28.44	38.27	41.80	34.13
	33.81	33.27	45.49	39.64	45.07	56.71
	41.65	42.28	41.93	37.98	35.43	36.82
	22.89	35.71	30.18	36.59	33.42	37.52
	55.34	48.64	49.17	49.45	59.72	45.20
	43.31	40.70	41.49	30.12	44.06	35.71
MEAN	35	35	35	35	39	38
SD.	11	10	10	9	12	10

% CHANGE

DAY1	DAY3	DAY7
-9	-6	-1
31	9	5
6	23	17
-19	11	-25
7	-30	-9
17	-14	0
23	-16	-15
-12	-26	22
2	15	-21
-1	10	-4
-36	-19	-11
14	-1	32
6	38	23

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.29	0.30
0.39	0.32	0.31
0.31	0.36	0.34
0.27	0.33	0.26
0.32	0.25	0.28
0.34	0.28	0.30
0.36	0.27	0.27
0.28	0.26	0.36
0.31	0.34	0.26
0.30	0.33	0.29
0.24	0.27	0.28
0.34	0.30	0.39
0.32	0.42	0.36
0.312	0.308	0.310
0.039	0.046	0.041

QUADRICEPS PEAK T.A.E. : PLACEBO GROUP

Q.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	24.82	28.58	22.93	26.94	27.00	30.53
	34.57	34.57	37.84	37.92	37.25	39.46
	29.27	44.98	49.56	47.08	50.16	48.91
	19.77	24.65	24.14	22.49	23.68	23.48
	23.48	29.54	24.37	29.59	24.96	30.12
	27.83	33.68	32.17	29.57	33.74	35.17
	17.89	21.60	17.28	24.89	19.55	24.94
	29.76	28.97	36.31	30.90	33.90	31.58
	24.38	25.33	28.77	24.67	31.47	29.28
	35.76	42.39	39.83	40.28	13.79	49.21
	11.98	26.41	18.89	26.90	28.29	23.16
	48.51	50.60	67.25	55.77	78.66	51.67
	46.84	49.97	47.50	67.89	70.89	73.42
	44.93	48.50	55.41	47.51	56.97	58.36
MEAN	30	35	36	37	38	39
SD.	11	10	14	13	19	14

% CHANGE

DAY1	DAY3	DAY7
-13	-15	-12
0	0	-6
-35	5	3
-20	7	1
-21	-18	-17
-17	9	-4
-17	-31	-22
3	18	7
-4	17	7
-16	-1	-72
-55	-30	22
-4	21	52
-6	-30	-3
-7	17	-2

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.27	0.28
0.30	0.30	0.29
0.24	0.31	0.31
0.26	0.32	0.30
0.26	0.27	0.27
0.27	0.32	0.29
0.27	0.25	0.26
0.31	0.35	0.32
0.29	0.34	0.32
0.27	0.30	0.20
0.22	0.25	0.36
0.29	0.35	0.49
0.29	0.25	0.29
0.29	0.34	0.30
0.275	0.302	0.306
0.023	0.037	0.062

QUADRICEPS PEAK T.A.E. : DICLOFENAC GROUP

G.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	51.07	56.62	64.66	58.01	55.16	55.17
	18.75	28.74	25.44	25.01	24.12	25.41
	22.67	22.61	25.00	22.51	25.98	23.58
	12.47	17.19	17.00	18.41	18.02	19.01
	32.34	29.57	36.00	33.88	38.03	32.91
	24.98	20.59	14.85	11.93	21.08	20.65
	31.12	40.00	34.41	37.34	31.72	33.15
	23.67	30.19	28.25	26.08	29.24	25.41
	20.90	27.49	25.58	27.52	19.65	26.21
	55.85	49.58	56.31	37.52	62.58	61.23
	75.85	85.00	91.36	71.91	91.42	91.55
	45.77	56.98	43.54	53.62	55.77	54.87
	23.82	31.49	21.28	26.63	23.82	23.88
	38.59	47.33	41.90	46.72	41.18	36.58
	43.46	69.10	53.25	55.15	43.84	55.61
	36.33	47.46	42.55	45.21	42.62	45.26
	63.33	68.71	67.58	72.02	65.12	66.00
MEAN	35	36	40	39	41	41
SD.	15	13	19	18	19	20

% CHANGE

DAY1	DAY3	DAY7
-10	11	0
-35	2	-5
0	11	10
-27	-8	-5
9	6	16
21	24	2
-22	-9	-4
-22	8	15
-24	-7	-25
13	50	2
38	13	0
-20	-19	2
-25	-20	0
-18	-10	13
11	-3	-21
-23	-5	-4
-19	-7	-1

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.33	0.30
0.24	0.31	0.29
0.30	0.33	0.33
0.25	0.29	0.29
0.32	0.32	0.34
0.36	0.37	0.31
0.26	0.29	0.29
0.26	0.32	0.34
0.26	0.29	0.26
0.33	0.48	0.31
0.42	0.33	0.30
0.26	0.27	0.31
0.26	0.26	0.30
0.27	0.28	0.33
0.33	0.29	0.26
0.26	0.29	0.29
0.28	0.29	0.30
0.291	0.313	0.303
0.045	0.049	0.022

HAMSTRING PEAK T.A.E. : MECLOFENAMATE GROUP

G.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	29.83	32.63	27.77	28.35	31.36	34.42
	15.05	14.23	15.64	19.23	19.09	19.81
	20.77	19.81	23.70	18.56	25.86	29.60
	13.52	19.38	18.52	21.45	29.31	26.86
	16.11	18.73	21.34	25.85	24.27	29.29
	18.01	23.12	19.91	21.86	18.86	22.24
	12.31	14.15	15.00	15.56	12.48	17.69
	19.68	15.98	35.86	12.27	33.46	40.62
	21.14	28.53	39.43	37.52	19.28	49.51
	19.36	21.59	21.55	20.74	19.71	20.10
	7.78	26.48	8.38	23.16	10.68	16.43
	15.47	27.68	16.83	30.51	22.66	29.72
	23.75	21.20	19.21	17.94	29.64	23.48
MEAN	18	22	21	23	23	28
SD.	5	5	8	6	7	9

% CHANGE

DAY1	DAY3	DAY7
-12	-2	-9
6	-19	-4
10	28	-13
-26	-14	9
-14	-17	-17
-22	-27	-15
-6	-4	-29
16	-192	-18
-26	5	-61
-10	4	-2
-71	-64	-35
-44	-45	-24
12	7	26

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.28	0.30	0.28
0.32	0.27	0.29
0.33	0.38	0.28
0.25	0.28	0.32
0.27	0.27	0.27
0.26	0.25	0.27
0.29	0.29	0.25
0.34	0.13	0.27
0.26	0.31	0.21
0.28	0.31	0.30
0.20	0.21	0.24
0.23	0.23	0.26
0.33	0.32	0.37
0.280	0.272	0.279
0.039	0.059	0.038

HAMSTRING PEAK T.A.E. : PLACEBO GROUP

G.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
CYBEX	10.51	15.17	11.47	17.59	15.55	15.25
	13.09	11.17	16.42	13.33	17.71	16.89
	7.74	29.90	19.51	28.46	23.69	29.00
	4.26	19.52	18.39	20.22	6.82	16.72
	36.20	27.73	36.81	29.75	37.51	31.67
	14.97	17.09	27.87	28.56	15.21	32.14
	25.44	24.56	25.73	23.67	24.07	28.02
	11.77	27.08	15.76	31.40	16.51	26.29
	20.87	21.08	22.34	20.02	20.66	19.65
	25.60	30.78	23.53	34.79	15.28	34.59
	10.09	12.91	16.44	21.08	19.86	22.27
	22.70	32.42	32.71	30.59	32.21	35.24
	30.33	34.65	34.93	41.03	41.42	42.69
	24.12	31.89	25.60	32.58	32.61	36.49
MEAN	18	24	47	27	23	28
SD.	9	8	7	7	9	8

% CHANGE

DAY1	DAY3	DAY7
-31	-35	2
35	23	5
-73	-31	-18
-77	-9	-59
31	28	18
-12	-2	-53
4	0	-14
-57	-50	-37
-1	12	5
-23	-32	-56
-22	-22	-11
-30	7	-9
-12	-15	-3
-24	-21	-11

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.25	0.24	0.31
0.41	0.36	0.31
0.20	0.25	0.27
0.20	0.28	0.21
0.39	0.38	0.35
0.28	0.30	0.22
0.31	0.30	0.27
0.22	0.22	0.24
0.30	0.33	0.31
0.26	0.25	0.22
0.26	0.26	0.28
0.25	0.32	0.28
0.28	0.27	0.30
0.26	0.26	0.28
0.275	0.288	0.275
0.059	0.045	0.039

HAMSTRING PEAK T.A.E. : DICLOFENAC GROUP

G.P.T.	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
	16.20	31.17	14.23	30.15	28.13	35.27
	7.65	11.08	9.73	14.48	12.57	10.51
	14.32	14.91	15.01	14.99	15.90	15.49
	0.01	9.87	8.89	12.16	8.96	12.36
	40.75	38.51	35.05	37.12	38.57	36.25
	13.24	16.92	11.18	10.50	12.81	12.26
	22.10	26.36	21.23	22.22	21.24	20.66
	9.07	14.58	12.34	14.33	17.80	17.95
	19.77	16.72	25.34	17.51	22.33	16.64
	37.29	36.60	38.90	45.25	48.69	40.95
	45.65	26.54	47.87	43.27	52.53	60.52
	31.16	37.84	27.82	31.03	38.79	40.05
	5.40	14.16	4.44	12.23	6.61	15.87
	25.08	31.94	25.79	27.63	23.84	21.54
	12.59	26.10	27.98	26.25	26.06	32.56
	22.22	33.26	27.76	32.39	32.16	36.37
	26.46	28.44	29.41	32.50	28.15	22.84
MEAN	21	24	23	25	26	26
SD.	12	9	12	11	13	13

% CHANGE

DAY1	DAY3	DAY7
-48	-33	-20
-31	-33	20
-4	0	3
-100	-27	-28
6	-6	6
-22	6	4
-16	-4	3
-38	-14	-1
18	45	34
2	-14	19
72	11	-13
-18	-10	-3
-62	-64	-58
-21	-7	11
-52	7	-20
-33	-14	-12
-7	-10	23

@LOG((x+0.5)/(100.5-x)+2

DAY1	DAY3	DAY7
0.23	0.22	0.26
0.25	0.24	0.35
0.29	0.30	0.31
0.18	0.25	0.25
0.32	0.29	0.32
0.26	0.32	0.31
0.27	0.29	0.31
0.24	0.27	0.30
0.35	0.45	0.40
0.31	0.27	0.35
0.66	0.33	0.28
0.27	0.28	0.30
0.21	0.21	0.21
0.26	0.29	0.33
0.22	0.32	0.26
0.24	0.27	0.28
0.29	0.28	0.36
0.284	0.288	0.305
0.102	0.051	0.045

TOTAL PAIN VALUES : MECLOFENAMATE GROUP

VAS	D1	D3	D7
	[illegible]	2	0
	11	4	2
	15	12	5
	15	10	4
	23	14	3
	29	32	12
	14	8	13
	39	15	5
	32	13	3
	28	24	23
	44	21	19
	27	22	9
	18	12	3
MEAN	24.38	15.31	7.85
SD.	[illegible]	[illegible]	6.60

TOTAL PAIN VALUES : PLACEBO GROUP

VAS	D1	D3	D7
	26	6	4
	5	0	1
	46	19	1
	10	3	0
	5	1	2
	24	21	3
	17	12	5
	36	17	4
	33	16	8
	38	25	8
	37	26	12
	32	11	0
	21	5	2
	25	14	2
MEAN	25.36	12.57	3.86
SD.	12.23	8.31	3.38

TOTAL PAIN VALUES : DICLOFENAC GROUP

VAS	D1	D3	D7
	44	28	15
	29	16	5
	42	34	7
	27	17	5
	16	13	1
	20	4	3
	19	10	12
	24	10	4
	15	6	4
	29	21	19
	9	15	27
	37	28	3
	37	31	25
	27	22	4
	14	15	4
	27	9	5
	27	23	4
	26.82	17.82	8.76
	9.96	8.68	7.70

MEAN
SD.

SWELLING MEASUREMENTS : MECLOFENAMATE GROUP

cm	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	% CHANGE DAY1	DAY3	DAY7
	55	65	64	64	64	64	0	0	0
	43	44	42	42	41	42	-2	0	-2
	55	54	54	54	53	54	2	0	-2
	59	59	59	59	59	59	0	0	0
	50	50	54	54	53	53	0	0	0
	41	39	42	41	41	41	5	2	0
	55	55	55	55	55	55	0	0	0
	52	53	52	53	53	54	-2	-2	-2
	53	51	52	53	52	52	4	-2	0
	54	53	54	53	54	54	2	2	0
	58	57	58	57	59	59	2	2	0
	52	52	52	52	52	52	0	0	0
	62	62	62	62	62	62	0	0	0
MEAN	53.77	53.38	53.85	53.77	53.69	53.92			
SD.	6.46	6.63	6.24	6.31	6.58	6.43			

SWELLING MEASUREMENTS : PLACEBO GROUP

cm	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	% CHANGE DAY1	DAY3	DAY7
	52	51	50	52	51	53	2	-4	-4
	59	58	57	57	57	57	0	0	0
	54	53	57	57	57	57	2	0	0
	45	45	45	45	47	47	0	0	0
	47	48	47	47	47	47	-2	0	0
	54	52	53	52	52	52	4	2	0
	53	55	53	54	55	55	-4	-2	0
	52	54	55	54	54	54	-2	2	0
	57	52	56	56	56	57	2	0	-2
	61	60	62	60	62	60	3	3	3
	41	42	42	43	42	44	-2	-2	-5
	59	60	58	60	59	60	-3	-3	-2
	57	56	57	56	57	57	2	2	0
	58	58	58	59	58	58	2	0	0
MEAN	53.29	53.14	53.57	53.64	53.86	54.14			
SD.	5.83	5.19	5.46	5.15	5.29	4.84			

SWELLING MEASUREMENTS : DICLOFENAC GROUP

cm	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	% CHANGE DAY1	DAY3	DAY7
	59	57	59	57	57	57	4	4	0
	53	52	53	53	53	53	2	0	0
	48	46	47	47	47	47	4	0	0
	47	46	46	46	46	46	2	0	0
	54	54	55	54	54	54	0	2	0
	70	70	69	69	69	69	0	0	0
	60	61	60	61	60	60	-2	-2	0
	46	45	51	51	49	49	2	0	0
	51	51	51	51	51	51	0	0	0
	61	59	60	58	60	60	3	3	0
	57	58	56	55	58	56	-2	2	4
	42	42	42	43	42	43	0	-2	-2
	38	38	39	39	38	39	0	0	-3
	46	46	46	46	46	46	0	0	0
	59	60	59	59	59	60	-2	0	-2
	55	55	55	55	55	55	0	0	0
	55	55	55	55	55	55	0	0	0
MEAN	53.00	52.65	53.12	52.88	52.88	52.94			
SD.	7.70	7.85	7.30	7.06	7.44	7.22			

MUSCLE TEST		AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
POWER (NWTM)		260	315	279	314	310	302
		189	196	198	199	204	206
ENDURANCE (JOULES)		3503	3610	3402	3606	3314	3779
		1962	2121	1915	2134	2363	2360
D/H RATIO AFF SIDE		68		67		66	
PAIN (VAS):24H		2		1		0	
	:PALPATION	5		1		0	
	:MOVEMENT	2		0		0	
	:WALKING	1		0		0	
	:JOGGING		10		1		0
SWELLING:AFF. SIDE		65		64		64	
	:UNAFF.SIDE	65		64		64	
GAIT		1		1		1	
MUSCLE TEST CONT'D							
AVERAGE POWER (W)		329	352	302	321	302	334
		183	205	168	189	214	220
PEAK T.A.E. (J)		51.23	56.62	51.61	54.62	55.56	56.16
		28.83	32.63	27.77	28.35	31.36	34.42

MUSCLE TEST		AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
POWER (NWTM)		173	279	242	259	261	286
		78	157	151	173	184	184
ENDURANCE (JOULES)		2430	3097	3236	3320	3018	3080
		716	1908	1947	2155	2202	2028
D/H RATIO AFF SIDE		45		63		63	
PAIN (VAS):24H		4		0		0	
	:PALPATION	8		0		0	
	:MOVEMENT	4		0		0	
	:WALKING	4		0		0	
	:JOGGING		20		0		0
SWELLING:AFF. SIDE		51		50		49	
	:UNAFF.SIDE	48		50		51	
GAIT		3		1		1	
MUSCLE TEST CONT'D							
AVERAGE POWER (W)		280	324	288	314	271	291
		81	181	172	203	197	190
PEAK T.A.E. (J)		45.59	39.91	47.25	47.40	40.03	45.68
		15.00	23.83	25.33	32.86	28.24	33.22

MUSCLE TEST		AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7
POWER (NWTM)		165	231	185	212	189	226
		71	119	94	120	100	120
ENDURANCE (JOULES)		2956	2506	2994	3293	2814	2947
		1604	1483	2066	2413	1932	2005
D/H RATIO AFF SIDE		43		51		53	
PAIN (VAS):24H		0		0		0	
	:PALPATION	4		3		1	
	:MOVEMENT	6		1		1	
	:WALKING	1		0		0	
	:JOGGING		11		4		2
SWELLING:AFF. SIDE		43		42		41	
	:UNAFF.SIDE	44		42		42	
GAIT		1		1		1	
MUSCLE TEST CONT'D							
AVERAGE POWER (W)		287	243	272	289	250	250
		154	142	186	210	170	169
PEAK T.A.E. (J)		42.19	32.27	35.49	32.52	36.20	34.52
		15.05	14.23	15.64	19.23	19.09	19.81

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	VI
POWER (NWTM)	G	128	223	168	267	191	245	
		78	88	111	126	113	122	
ENDURANCE (JOULES)		2003	2704	2030	2873	2370	2594	
		1096	1458	1514	1390	1287	1662	
G/H RATIO AFF SIDE		57		66		60		
PAIN (VAS):24H		4		1		0		
:PALPATION		5		5		3		
:MOVEMENT		3		3		3		
:WALKING		2		1		0		
:JOGGING			17		10		5	
SWELLING:AFF. SIDE		51		51		54		
:UNAFF.SIDE		51		51		55		
GAIT		2		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		217	272	202	303	251	269	
		116	142	149	144	135	171	
PEAK T.A.E. (J)		30.38	41.32	31.94	34.11	37.32	45.00	
		18.84	20.61	29.71	30.33	20.46	25.20	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	VII
POWER (NWTM)	H	237	221	193	187	214	187	
		119	90	135	92	141	123	
ENDURANCE (JOULES)		3673	2652	2561	2352	2638	1989	
		1233	1380	1549	1402	1949	1952	
G/H RATIO AFF SIDE		50		70		66		
PAIN (VAS):24H		6		2		1		
:PALPATION		8		5		5		
:MOVEMENT		7		4		0		
:WALKING		5		1		0		
:JOGGING			26		12		6	
SWELLING:AFF. SIDE		55		54		53		
:UNAFF.SIDE		54		54		54		
GAIT		3		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		272	291	239	217	247	175	
		124	149	171	128	171	174	
PEAK T.A.E. (J)		40.01	38.01	39.91	32.46	52.41	44.93	
		20.73	18.81	23.70	18.56	25.86	29.60	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	VIII
POWER (NWTM)	Q	150	336	303	315	282	359	
		104	192	165	215	157	214	
ENDURANCE (JOULES)		2964	4552	4097	4200	3829	4492	
		899	3088	2750	2840	3449	3033	
Q/H RATIO AFF SIDE		69		54		56		
PAIN (VAS):24H		6		0		0		
:PALPATION		7		7		6		
:MOVEMENT		8		2		0		
:WALKING		6		1		0		
:JOGGING			27		10		6	
SWELLING:AFF. SIDE		44		44		43		
:UNAFF.SIDE		43		45		42		
GAIT		3		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		328	422	385	396	358	401	
		99	284	257	267	321	270	
PEAK T.A.E. (J)		42.46	56.34	52.31	50.70	47.19	54.21	
		17.98	27.11	31.20	29.45	43.40	32.87	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	IX
POWER (NWTM)	H	131	128	128	128	134	122	
		80	85	46	80	55	65	
ENDURANCE (JOULES)		2092	2494	1969	1979	2128	2009	
		1997	1775	770	1446	1219	1445	
G/H RATIO AFF SIDE		38		36		41		
PAIN (VAS):24H		6		1		0		
:PALPATION		3		3		4		
:MOVEMENT		9		2		0		
:WALKING		3		0		0		
:JOGGING			26		8		4	
SWELLING:AFF. SIDE		52		50		51		
:UNAFF.SIDE		51		52		53		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		175	226	178	183	216	199	
		101	160	72	138	123	142	
PEAK T.A.E. (J		24.82	28.88	22.93	26.94	27.00	30.53	
		10.51	15.17	11.47	17.59	15.55	15.25	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	X
POWER (NWTM)	G	184	193	143	146	174	161	
		126	104	100	104	115	107	
ENDURANCE (JOULES)		2717	3264	2349	3055	2621	2861	
		1899	2194	2054	2223	1884	2005	
G/H RATIO AFF SIDE		68		70		66		
PAIN (VAS):24H		5		4		1		
:PALPATION		8		6		3		
:MOVEMENT		7		7		4		
:WALKING		4		2		0		
:JOGGING			24		19		8	
SWELLING:AFF. SIDE		49		45		45		
:UNAFF.SIDE		48		46		45		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		268	305	274	290	280	274	
		185	204	196	210	200	190	
PEAK T.A.E. (J)		37.33	44.53	39.87	42.45	44.41	44.77	
		24.13	26.84	24.91	27.87	27.59	27.87	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	XI
POWER (NWTM)	Q	249	269	271	246	275	269	
		115	145	138	131	146	141	
ENDURANCE (JOULES)		2561	2954	2946	3038	3018	3051	
		1125	1019	1352	1191	1355	1415	
G/H RATIO AFF SIDE		46		51		53		
PAIN (VAS):24H		2		0		0		
:PALPATION		4		0		0		
:MOVEMENT		4		0		0		
:WALKING		3		0		0		
:JOGGING		5	18	0	0	0	0	
SWELLING:AFF. SIDE		54		56		56		
:UNAFF.SIDE		55		55		56		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		139	154	301	312	299	328	
		89	89	136	120	185	153	
PEAK T.A.E. (J)		28.91	28.98	45.56	41.98	46.78	43.21	
		20.65	19.78	24.69	21.59	25.69	25.09	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	XIII
POWER (NWTM)	H	183	199	162	188	181	204	
		103	85	104	89	116	100	
ENDURANCE (JOULES)		2873	2951	2654	2867	2894	3192	
		1209	916	1585	1365	1606	1445	
Q/H RATIO AFF SIDE		56		64		64		
PAIN (VAS):24H		2		0		0		
:PALPATION		3		0		1		
:MOVEMENT		0		0		0		
:WALKING		0		0		0		
:JOGGING			5		0		1	
SWELLING:AFF. SIDE		58		57		57		
:UNAFF.SIDE		58		57		57		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		260	288	251	255	277	315	
		108	78	148	120	152	142	
PEAK T.A.E. (J)		34.57	34.57	37.84	37.92	37.25	39.46	
		15.09	11.17	16.42	13.33	17.71	16.89	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	1
POWER (NWTM)	H	237	269	241	238	208	234	
		56	169	70	176	120	165	
ENDURANCE (JOULES)		3158	3133	3589	3631	3671	3738	
		493	1571	696	1924	1954	2503	
Q/H RATIO AFF SIDE		24		29		58		
PAIN (VAS):24H		9		3		1		
:PALPATION		9		8		6		
:MOVEMENT		9		7		4		
:WALKING		7		4		0		
:JOGGING		10	44	6	28	4	15	
SWELLING:AFF. SIDE		59		59		57		
:UNAFF.SIDE		57		57		57		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		349	396	367	413	398	407	
		53	195	70	215	210	270	
PEAK T.A.E. (J)		51.07	56.62	64.68	58.01	55.16	55.17	
		16.20	31.17	14.23	30.15	28.13	35.27	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	2
POWER (NWTM)	Q	193	229	215	246	227	245	
		123	112	115	119	122	117	
ENDURANCE (JOULES)		1875	2707	2386	2496	3166	3013	
		1835	1648	1751	1318	2341	1824	
Q/H RATIO AFF SIDE		64		53		54		
PAIN (VAS):24H		4		2		0		
:PALPATION		6		7		2		
:MOVEMENT		6		3		0		
:WALKING		5		1		0		
:JOGGING		7	28	3	16	1	3	
SWELLING:AFF. SIDE		55		55		55		
:UNAFF.SIDE		55		55		55		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		226	328	264	262	326	336	
		219	198	192	137	239	202	
PEAK T.A.E. (J)		37.41	45.96	40.46	51.67	42.63	45.51	
		28.23	25.35	27.42	23.15	30.44	27.91	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	3
POWER (NWTM)	H	223	208	252	227	257	231	
		37	111	90	119	110	117	
ENDURANCE (JOULES)		2117	3274	2964	3179	2971	3200	
		114	2441	1345	2655	1444	2715	
Q/H RATIO AFF SIDE		17		32		49		
PAIN (VAS):24H		9		3		0		
:PALPATION		9		7		1		
:MOVEMENT		10		0		0		
:WALKING		8		3		0		
:JOGGING		10	46	5	19	3	1	
SWELLING:AFF. SIDE		54		57		57		
:UNAFF.SIDE		53		57		57		
GAIT		2		0		0		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		256	317	312	354	315	341	
		13	234	140	275	149	278	
PEAK T.A.E. (J)		29.27	44.98	49.56	47.09	50.16	48.91	
		7.74	28.90	19.51	28.46	23.69	29.00	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	4
POWER (NWTM)	H	184	167	149	161	167	169	
		107	111	100	111	113	111	
ENDURANCE (JOULES)		1721	1930	1559	1647	1712	1739	
		1085	1548	1292	1343	1491	1301	
Q/H RATIO AFF SIDE		58		57		67		
PAIN (VAS):24H		2		0		0		
:PALPATION		3		2		0		
:MOVEMENT		2		0		0		
:WALKING		1		0		0		
:JOGGING		2	10	1	3	0	0	
SWELLING:AFF. SIDE		45		45		47		
:UNAFF.SIDE		45		45		47		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		141	139	128	138	158	131	
		73	111	96	96	103	95	
PEAK T.A.E. (J)		19.77	24.65	24.14	22.49	23.68	23.48	
		4.26	18.52	18.39	20.22	6.82	16.72	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	5
POWER (NWTM)	H	159	191	153	165	180	180	
		46	108	71	108	81	113	
ENDURANCE (JOULES)		1631	1715	1665	1553	1760	1866	
		232	774	799	949	826	620	
Q/H RATIO AFF SIDE		29		46		45		
PAIN (VAS):24H		5		2		0		
:PALPATION		6		4		3		
:MOVEMENT		7		4		1		
:WALKING		4		2		0		
:JOGGING		7	29	4	16	1	5	
SWELLING:AFF. SIDE		53		53		53		
:UNAFF.SIDE		52		53		53		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		124	150	146	130	150	152	
		23	72	70	80	75	53	
PEAK T.A.E. (J)		18.75	28.74	25.44	25.01	24.12	25.41	
		7.65	11.08	9.73	14.48	12.57	10.51	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	6
POWER (NWTM)	H	148	179	123	172	153	164	
		26	113	43	107	89	94	
ENDURANCE (JOULES)		2316	2296	2285	2239	2204	2197	
		278	955	559	942	362	936	
Q/H RATIO AFF SIDE		19		35		45		
PAIN (VAS):24H		9		6		9		
:PALPATION		9		9		7		
:MOVEMENT		9		8		1		
:WALKING		6		6		1		
:JOGGING		9	42	9	34	1	7	
SWELLING:AFF. SIDE		48		47		47		
:UNAFF.SIDE		46		47		47		
GAIT		2		2		-		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		199	150	191	139	205	193	
		71	81	79	81	85	82	
PEAK T.A.E. (J)		22.67	22.61	26.00	22.51	25.98	23.38	
		14.32	14.71	15.01	14.99	15.90	15.49	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	8
POWER (NWTM)	H	121	134	149	152	148	160	
		71	81	71	84	89	85	
ENDURANCE (JOULES)		1345	1671	1405	1561	1519	1675	
		382	495	256	496	313	519	
Q/H RATIO AFF SIDE		58		47		61		
PAIN (VAS):24H		3		2		0		
:PALPATION		7		4		1		
:MOVEMENT		5		4		1		
:WALKING		3		1		0		
:JOGGING		8	27	6	17	3	5	
SWELLING:AFF. SIDE		47		46		46		
:UNAFF.SIDE		46		46		46		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		113	136	111	130	120	135	
		23	41	35	39	40	42	
PEAK T.A.E. (J)		12.47	17.19	17.00	18.41	18.02	19.01	
		0.01	9.87	8.89	12.16	8.96	12.36	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	9
POWER (NWTM)	H	149	172	174	161	186	167	
		76	137	84	130	170	156	
ENDURANCE (JOULES)		1744	2232	2191	2125	2011	2384	
		782	1509	1242	1653	1626	1416	
Q/H RATIO AFF SIDE		51		48		91		
PAIN (VAS):24H		5		0		0		
:PALPATION		7		4		2		
:MOVEMENT		4		2		1		
:WALKING		4		2		0		
:JOGGING		6	26	2	10	1	4	
SWELLING:AFF. SIDE		59		59		59		
:UNAFF.SIDE		59		59		59		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		160	205	205	197	204	228	
		74	139	116	150	163	134	
PEAK T.A.E. (J)		22.88	27.84	28.62	25.86	20.31	26.94	
		13.52	18.38	18.52	21.45	29.31	26.86	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	10
POWER (NWTM)	%	236	221	266	251	256	245	
		157	155	156	155	160	157	
ENDURANCE (JOULES)		3482	3027	3512	3120	3535	3296	
		2548	1707	2442	1798	2336	1928	
G/H RATIO AFF SIDE		67		59		62		
PAIN (VAS):24H		0		0		0		
:PALPATION		3		1		2		
:MOVEMENT		0		0		0		
:WALKING		1		0		0		
:JOGGING		1	5	0	1	0	2	
SWELLING:AFF. SIDE		47		47		47		
:UNAFF.SIDE		48		47		47		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		296	270	299	271	301	285	
		224	199	229	161	236	165	
PEAK T.A.E. (J)		23.48	29.54	24.37	29.59	24.96	30.12	
		36.20	27.73	36.81	28.75	37.51	31.67	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	13
POWER (NWTM)	%	130	155	140	151	146	155	
		91	94	94	99	106	98	
ENDURANCE (JOULES)		1240	1997	1375	1940	1870	1945	
		1742	1250	1797	1369	1194	1102	
G/H RATIO AFF SIDE		69		67		72		
PAIN (VAS):24H		2		0		0		
:PALPATION		5		3		2		
:MOVEMENT		4		2		0		
:WALKING		4		1		0		
:JOGGING		5	21	1	7	0	2	
SWELLING:AFF. SIDE		53		53		50		
:UNAFF.SIDE		53		53		53		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		143	173	148	171	150	163	
		98	107	98	98	97	92	
PEAK T.A.E. (J)		17.00	22.04	18.46	23.12	21.31	24.68	
		10.86	12.12	11.73	12.32	12.89	11.77	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	14
POWER (NWTM)	H	205	235	214	217	248	236	
		132	140	136	149	161	172	
ENDURANCE (JOULES)		2646	2799	2919	2869	2941	2974	
		1394	1177	1613	1647	1407	1948	
G/H RATIO AFF SIDE		64		64		65		
PAIN (VAS):24H		6		5		1		
:PALPATION		8		7		3		
:MOVEMENT		3		2		0		
:WALKING		3		4		0		
:JOGGING		4	24	3	21	1	5	
SWELLING:AFF. SIDE		54		53		52		
:UNAFF.SIDE		52		52		52		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		209	237	238	248	252	261	
		116	102	138	142	126	169	
PEAK T.A.E. (J)								

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	15
POWER (NWTM)	H	207	231	224	236	278	274	
		93	109	104	95	132	129	
ENDURANCE (JOULES)		2336	2269	1676	2033	1913	2897	
		1138	941	1128	1119	1163	1474	
Q/H RATIO AFF SIDE		45		47		47		
PAIN (VAS):24H		4		1		0		
:PALPATION		7		4		2		
:MOVEMENT		5		4		0		
:WALKING		3		3		0		
:JOGGING		4	23	2	14	1	3	
SWELLING:AFF. SIDE		50		54		53		
:UNAFF.SIDE		50		54		53		
GAIT		1		-		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		214	210	169	191	237	265	
		109	92	108	111	138	139	
PEAK T.A.E. (J)		33.34	31.25	20.52	29.18	30.27	33.18	
		16.11	18.73	21.34	25.89	24.27	29.29	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	16
POWER (NWTM)	H	198	224	235	254	245	251	
		71	129	50	134	100	155	
ENDURANCE (JOULES)		1477	2535	2162	2139	2562	2490	
		1768	2385	2065	2745	2333	2959	
Q/H RATIO AFF SIDE		36		34		41		
PAIN (VAS):24H		4		0		0		
:PALPATION		3		7		2		
:MOVEMENT		4		3		1		
:WALKING		2		0		0		
:JOGGING		4	17	2	12	2	5	
SWELLING:AFF. SIDE		53		53		55		
:UNAFF.SIDE		55		54		55		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		126	212	167	176	208	250	
		140	187	160	201	201	232	
PEAK T.A.E. (J)		17.89	21.60	17.28	24.89	19.55	24.94	
		25.44	24.55	23.73	23.67	24.07	28.02	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	17
POWER (NWTM)	H	237	243	214	224	220	216	
		75	107	96	113	110	126	
ENDURANCE (JOULES)		2590	2928	3230	3130	3095	3215	
		819	2134	1335	2252	1502	2041	
Q/H RATIO AFF SIDE		31		45		50		
PAIN (VAS):24H		7		2		0		
:PALPATION		9		5		2		
:MOVEMENT		6		3		1		
:WALKING		6		2		0		
:JOGGING		8	36	5	17	1	4	
SWELLING:AFF. SIDE		53		55		54		
:UNAFF.SIDE		54		54		54		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		226	259	273	274	258	262	
		71	188	113	195	123	164	
PEAK T.A.E. (J)		29.76	28.97	36.31	30.90	33.90	31.58	
		11.77	27.08	15.76	31.40	16.51	26.29	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	18
POWER (NWTM)	H	256	229	237	186	243	267	
		94	130	122	122	148	172	
ENDURANCE (JOULES)		2350	2456	2998	2711	2786	2724	
		2165	2291	2707	2214	2799	2382	
Q/H RATIO AFF SIDE		37		51		51		
PAIN (VAS):24H		6		2		1		
:PALPATION		9		5		3		
:MOVEMENT		5		2		2		
:WALKING		6		2		0		
:JOGGING		8	33	5	16	2	8	
SWELLING:AFF. SIDE		53		56		56		
:UNAFF.SIDE		52		56		57		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		191	201	240	206	223	224	
		167	167	194	162	210	190	
PEAK T.A.E. (J)		24.38	25.33	28.77	24.67	31.47	29.28	
		20.87	21.08	22.34	20.02	20.66	19.65	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	19
POWER (NWTM)	H	163	182	132	201	187	194	
		75	134	98	140	113	137	
ENDURANCE (JOULES)		2142	2106	1987	2126	2048	2115	
		1814	2313	2020	2539	2032	2545	
Q/H RATIO AFF SIDE		46		49		60		
PAIN (VAS):24H		4		7		2		
:PALPATION		8		6		5		
:MOVEMENT		5		3		2		
:WALKING		5		7		0		
:JOGGING		7	29	7	32	3	12	
SWELLING:AFF. SIDE		41		42		41		
:UNAFF.SIDE		39		41		41		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		171	176	159	179	171	180	
		143	189	157	191	158	199	
PEAK T.A.E. (J)		22.78	19.55	20.48	23.73	23.26	23.21	
		18.01	23.12	15.91	21.96	18.86	22.24	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	20
POWER (NWTM)	H	244	237	236	241	251	256	
		161	159	159	157	160	160	
ENDURANCE (JOULES)		3973	3681	4049	3850	3817	3797	
		3092	2854	3119	2806	2896	3016	
Q/H RATIO AFF SIDE		66		67		64		
PAIN (VAS):24H		2		1		0		
:PALPATION		4		4		3		
:MOVEMENT		1		3		0		
:WALKING		0		2		0		
:JOGGING		3	10	3	13	0	3	
SWELLING:AFF. SIDE		54		55		54		
:UNAFF.SIDE		54		54		54		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		365	340	369	347	364	347	
		281	261	272	241	257	261	
PEAK T.A.E. (J)		32.34	29.57	36.00	33.88	38.03	32.91	
		40.75	38.51	35.05	37.12	38.57	36.25	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	22
POWER (NWTM)	H	207	180	198	172	186	156	
		80	92	91	84	106	98	
ENDURANCE (JOULES)		2012	1424	2432	2241	2802	2329	
		1063	966	1362	1478	1480	1550	
Q/H RATIO AFF SIDE		39		46		57		
PAIN (VAS):24H		4		0		0		
:PALPATION		4		3		2		
:MOVEMENT		4		0		0		
:WALKING		2		0		0		
:JOGGING		6	20	1	4	1	3	
SWELLING:AFF. SIDE		70		69		69		
:UNAFF.SIDE		70		69		69		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		195	140	160	175	241	206	
		105	91	5	110	129	133	
PEAK T.A.E. (J)		24.98	20.59	14.85	11.93	21.08	20.65	
		13.24	16.92	11.13	10.50	12.31	12.26	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	24
POWER (NWTM)	G	164	222	187	225	220	251	
		79	118	99	115	114	133	
ENDURANCE (JOULES)		2830	3253	3149	3104	3372	3397	
		858	2000	1455	2089	2289	2564	
Q/H RATIO AFF SIDE		48		48		52		
PAIN (VAS):24H		3		3		0		
:PALPATION		7		3		2		
:MOVEMENT		5		1		1		
:WALKING		5		1		0		
:JOGGING		6	26	3	11	2	5	
SWELLING:AFF. SIDE		42		40		40		
:UNAFF.SIDE		41		40		40		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		249	297	266	280	312	317	
		75	175	111	181	201	238	
PEAK T.A.E. (J)		31.90	36.28	31.13	27.46	33.42	35.37	
		9.31	18.16	5.53	20.21	20.22	26.62	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	27
POWER (NWTM)	H	245	286	260	267	267	259	
		118	156	134	168	130	163	
ENDURANCE (JOULES)		3552	3907	3784	4336	3334	3221	
		1695	2222	2053	2213	1860	1746	
Q/H RATIO AFF SIDE		48		52		49		
PAIN (VAS):24H		2		1		1		
:PALPATION		4		3		4		
:MOVEMENT		4		1		2		
:WALKING		3		1		1		
:JOGGING		6	19	4	10	4	12	
SWELLING:AFF. SIDE		60		60		60		
:UNAFF.SIDE		61		61		60		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		313	346	338	381	286	289	
		142	185	180	194	158	156	
PEAK T.A.E. (J)		31.12	40.00	34.41	37.34	31.72	33.15	
		22.10	26.36	21.23	22.22	21.24	20.66	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	28
POWER (NWTM)	H	168	201	197	207	167	168	
		52	118	89	118	110	119	
ENDURANCE (JOULES)		2394	2270	2350	2456	2544	2620	
		929	1251	1082	1726	1724	1984	
Q/H RATIO AFF SIDE		31		46		66		
PAIN (VAS):24H		3		1		0		
:PALPATION		7		4		3		
:MOVEMENT		3		1		0		
:WALKING		3		1		0		
:JOGGING		8	24	3	10	1	4	
SWELLING:AFF. SIDE		46		51		49		
:UNAFF.SIDE		45		51		49		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		213	214	227	230	251	241	
		79	130	92	148	159	164	
PEAK T.A.E. (J)		23.67	30.19	28.25	26.08	29.24	25.41	
		9.07	14.59	12.34	14.33	17.80	17.95	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	29
POWER (NWTM)	H	174	213	167	197	182	207	
		98	118	114	121	110	113	
ENDURANCE (JOULES)		1916	2331	1845	2152	2062	2394	
		1450	1546	1364	1518	1456	1240	
Q/H RATIO AFF SIDE		56		68		60		
PAIN (VAS):24H		0		1		1		
:PALPATION		7		4		4		
:MOVEMENT		2		0		2		
:WALKING		2		2		2		
:JOGGING		3	14	1	8	4	13	
SWELLING:AFF. SIDE		55		55		55		
:UNAFF.SIDE		55		55		55		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		184	222	184	208	199	239	
		128	146	117	138	125	126	
PEAK T.A.E. (J)		25.06	20.32	21.86	26.14	25.49	30.11	
		13.31	14.15	15.00	15.56	12.48	17.69	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	30
POWER (NWTM)	H	153	169	195	183	183	199	
		91	113	114	113	119	117	
ENDURANCE (JOULES)		1465	1743	1695	1796	1619	1831	
		974	974	1176	1206	1135	1083	
Q/H RATIO AFF SIDE		59		58		59		
PAIN (VAS):24H		3		1		0		
:PALPATION		6		2		3		
:MOVEMENT		3		1		0		
:WALKING		1		0		1		
:JOGGING		2	15	2	6	0	4	
SWELLING:AFF. SIDE		51		51		51		
:UNAFF.SIDE		51		51		51		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		164	197	187	189	183	194	
		106	107	120	110	119	105	
PEAK T.A.E. (J)		20.90	27.49	25.58	27.52	19.65	26.21	
		19.77	16.72	25.34	17.51	22.33	16.64	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	38
POWER (NWTM)	H	193	241	207	251	250	262	
		71	149	122	155	148	165	
ENDURANCE (JOULES)		1628	2058	1679	2196	1907	2403	
		1144	2040	1790	2191	2158	2243	
Q/H RATIO AFF SIDE		37		59		53		
PAIN (VAS):24H		4		2		1		
:PALPATION		9		6		3		
:MOVEMENT		5		3		1		
:WALKING		4		1		0		
:JOGGING		7	29	3	15	1	6	
SWELLING:AFF. SIDE		52		52		53		
:UNAFF.SIDE		53		53		54		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		169	145	152	151	212	150	
		147	95	154	125	161	174	
PEAK T.A.E. (J)		22.47	25.42	28.44	39.27	41.80	34.13	
		19.68	16.98	35.85	12.27	35.46	40.62	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	40
POWER (NWTM)	O	127	283	259	277	251	256	
		98	146	126	152	145	151	
ENDURANCE (JOULES)		2130	2317	2150	2308	2178	2333	
		1662	2160	1708	2187	1761	2134	
Q/H RATIO AFF SIDE		69		52		59		
PAIN (VAS):24H		7		1		0		
:PALPATION		9		2		0		
:MOVEMENT		4		2		0		
:WALKING		4		2		0		
:JOGGING		10	34	3	10	0	0	
SWELLING:AFF. SIDE		42		42		41		
:UNAFF.SIDE		41		42		42		
GAIT		3		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		202	230	211	231	223	235	
		159	189	163	191	165	210	
PEAK T.A.E. (J)		47.98	39.01	50.44	40.88	53.10	55.46	
		19.79	29.67	29.58	37.88	39.38	48.85	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	41
POWER (NWTM)	H	224	287	214	228	222	232	
		61	137	69	126	83	142	
ENDURANCE (JOULES)		2065	2756	2198	2796	2320	2229	
		1041	1894	1246	1940	1343	1959	
Q/H RATIO AFF SIDE		27		32		37		
PAIN (VAS):24H		7		5		1		
:PALPATION		9		7		2		
:MOVEMENT		8		5		2		
:WALKING		6		3		1		
:JOGGING		8	38	5	25	2	8	
SWELLING:AFF. SIDE		62		62		62		
:UNAFF.SIDE		60		60		60		
GAIT		3		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		167	233	165	222	188	192	
		79	150	95	140	101	148	
PEAK T.A.E. (J)		35.76	42.39	39.83	40.28	13.79	49.21	
		23.60	30.78	23.53	34.79	15.28	34.59	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	42
POWER (NWTM)	h	229	270	240	251	263	283	
		119	137	141	137	144	164	
ENDURANCE (JOULES)		2705	2648	2632	2467	2921	2911	
		2123	2194	2183	2580	2500	2430	
G/H RATIO AFF SIDE		52		63		65		
PAIN (VAS):24H		5		3		2		
:PALPATION		5		6		5		
:MOVEMENT		5		4		5		
:WALKING		5		3		2		
:JOGGING		9	29	5	21	5	19	
SWELLING:AFF. SIDE		61		60		60		
:UNAFF.SIDE		59		58		60		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		229	224	247	215	261	279	
		179	183	193	221	230	196	
PEAK T.A.E. (J)		55.85	49.58	56.31	37.52	62.58	61.23	
		37.29	36.60	38.90	45.25	48.69	40.95	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	43
POWER (NWTM)	0	187	245	190	213	176	206	
		113	127	108	117	98	102	
ENDURANCE (JOULES)		1903	2042	1937	2073	1984	2107	
		610	1169	598	610	504	354	
G/H RATIO AFF SIDE		60		57		56		
PAIN (VAS):24H		4		2		1		
:PALPATION		5		1		0		
:MOVEMENT		2		0		0		
:WALKING		4		2		0		
:JOGGING		7	22	4	9	2	3	
SWELLING:AFF. SIDE		52		52		51		
:UNAFF.SIDE		52		51		51		
GAIT		3		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		172	195	175	199	180	202	
		52	105	59	100	37	28	
PEAK T.A.E. (J)		37.35	45.91	39.01	46.72	31.47	45.00	
		19.26	26.88	20.21	27.03	16.21	18.39	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	44
POWER (NWTM)	H	229	245	225	254	252	252	
		89	122	103	134	138	138	
ENDURANCE (JOULES)		1920	2408	2222	2065	2503	2633	
		1358	2004	1410	1911	1975	2193	
G/H RATIO AFF SIDE		39		46		55		
PAIN (VAS):24H		6		2		1		
:PALPATION		7		4		1		
:MOVEMENT		5		2		0		
:WALKING		5		2		0		
:JOGGING		9	32	3	13	1	3	
SWELLING:AFF. SIDE		53		52		52		
:UNAFF.SIDE		51		53		52		
GAIT		3		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		153	220	196	167	236	237	
		106	154	108	158	162	178	
PEAK T.A.E. (J)		33.81	33.27	45.49	39.64	45.07	56.71	
		21.14	28.53	39.43	37.52	19.28	49.51	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	45
POWER (NWTM)	H	141	148	151	152	152	146	
		73	95	85	107	103	93	
ENDURANCE (JOULES)		1405	1399	1414	1489	1639	1459	
		.463	989	672	989	911	1031	
Q/H RATIO AFF SIDE		52		57		68		
PAIN (VAS):24H		6		5		2		
:PALPATION		8		6		3		
:MOVEMENT		8		4		2		
:WALKING		5		4		2		
:JOGGING		10	37	7	26	3	12	
SWELLING:AFF. SIDE		41		42		42		
:UNAFF.SIDE		42		43		44		
GAIT		2		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		112	121	117	127	137	130	
		37	77	60	81	78	89	
PEAK T.A.E. (J)		11.98	26.41	18.89	26.90	28.29	23.16	
		10.09	12.91	16.44	21.08	19.86	22.27	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	46
POWER (NWTM)	Q	111	214	164	202	156	198	
		61	106	94	115	87	100	
ENDURANCE (JOULES)		1382	2088	1995	2057	1950	1941	
		380	836	976	804	585	798	
Q/H RATIO AFF SIDE		55		57		56		
PAIN (VAS):24H		4		2		2		
:PALPATION		8		5		4		
:MOVEMENT		5		2		3		
:WALKING		7		2		2		
:JOGGING		10	34	5	16	8	19	
SWELLING:AFF. SIDE		44		42		43		
:UNAFF.SIDE		43		42		43		
GAIT		4		2		2		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		120	170	161	166	164	149	
		29	71	80	62	45	63	
PEAK T.A.E. (J)		22.18	21.77	23.59	28.39	21.28	18.69	
		14.06	17.80	18.43	6.70	4.04	14.64	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	47
POWER (NWTM)	Q	125	216	141	179	159	212	
		98	132	95	117	113	117	
ENDURANCE (JOULES)		1630	2195	2026	2434	2189	2117	
		572	870	997	1116	487	1593	
Q/H RATIO AFF SIDE		78		67		75		
PAIN (VAS):24H		4		4		2		
:PALPATION		2		3		0		
:MOVEMENT		8		8		3		
:WALKING		8		4		3		
:JOGGING		10	32	6	25	4	12	
SWELLING:AFF. SIDE		99		51		51		
:UNAFF.SIDE		52		52		52		
GAIT		4		3		2		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		208	162	191	223	226	224	
		69	48	85	90	40	127	
PEAK T.A.E. (J)		33.44	33.54	40.98	36.98	24.23	31.53	
		27.22	22.76	29.29	30.49	16.36	28.50	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	48
POWER (NWTM)	Q	151	164	165	184	159	164	
		83	92	94	98	91	94	
ENDURANCE (JOULES)		2075	1821	2125	2174	2068	1978	
		901	793	928	1133	758	818	
Q/H RATIO AFF SIDE		55		57		57		
PAIN (VAS):24H		3		2		1		
:PALPATION		3		2		1		
:MOVEMENT		1		1		0		
:WALKING		2		3		0		
:JOGGING		5	14	4	12	1	3	
SWELLING:AFF. SIDE		52		52		52		
:UNAFF.SIDE		52		52		52		
GAIT		2		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		164	167	180	194	169	172	
		69	65	89	76	60	64	
PEAK T.A.E. (J)		32.93	34.91	21.20	36.98	37.15	31.68	
		17.76	19.56	22.11	21.36	16.06	19.95	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	49
POWER (NWTM)	Q	63	270	183	247	134	212	
		141	156	136	157	153	156	
ENDURANCE (JOULES)		2751	2687	2913	3843	2669	3385	
		2004	1948	2303	2527	1851	1793	
Q/H RATIO AFF SIDE		204		74		79		
PAIN (VAS):24H		9		6		5		
:PALPATION		10		9		7		
:MOVEMENT		6		8		8		
:WALKING		7		6		6		
:JOGGING		10	42	10	39	9	35	
SWELLING:AFF. SIDE		70		70		68		
:UNAFF.SIDE		69		70		68		
GAIT		4		3		2		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		256	244	383	267	303	222	
		157	157	231	188	146	142	
PEAK T.A.E. (J)		61.05	38.12	68.83	43.15	43.28	29.49	
		26.58	49.50	29.22	38.05	31.47	32.11	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	50
POWER (NWTM)	Q	178	188	155	178	179	168	
		96	106	34	126	111	118	
ENDURANCE (JOULES)		2152	2200	2013	2270	1932	2383	
		1834	1800	1971	2073	2003	2229	
Q/H RATIO AFF SIDE		54		61		62		
PAIN (VAS):24H		3		2		0		
:PALPATION		5		2		0		
:MOVEMENT		1		2		0		
:WALKING		2		0		0		
:JOGGING		3	14	3	9	1	1	
SWELLING:AFF. SIDE		50		51		51		
:UNAFF.SIDE		50		51		50		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		218	218	223	201	233	201	
		138	142	158	155	174	161	
PEAK T.A.E. (J)		45.14	42.83	50.19	35.64	45.70	32.93	
		44.10	40.48	39.70	51.86	37.80	40.40	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	53
POWER (NWTM)	H	181	187	176	171	138	152	
		74	132	103	105	94	89	
ENDURANCE (JOULES)		2410	2811	2511	2369	2329	2170	
		1183	1528	1379	1497	1241	1212	
G/H RATIO AFF SIDE		41		58		68		
PAIN (VAS):24H		6		3		4		
:PALPATION		8		7		8		
:MOVEMENT		5		5		5		
:WALKING		4		2		1		
:JOGGING		5	28	7	24	5	23	
SWELLING:AFF. SIDE		54		54		54		
:UNAFF.SIDE		53		53		54		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		222	280	246	236	241	238	
		115	151	140	154	132	130	
PEAK T.A.E. (J)		41.65	42.28	41.93	37.98	35.43	36.82	
		19.36	21.59	21.55	20.74	19.71	20.10	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	55
POWER (NWTM)	H	237	255	267	274	286	281	
		159	171	149	169	159	174	
ENDURANCE (JOULES)		3454	3405	3491	3501	3681	4098	
		2325	2759	2213	2763	2163	2771	
G/H RATIO AFF SIDE		67		56		55		
PAIN (VAS):24H		1		3		4		
:PALPATION		2		6		6		
:MOVEMENT		2		3		5		
:WALKING		1		1		6		
:JOGGING		2	8	2	15	6	27	
SWELLING:AFF. SIDE		57		56		58		
:UNAFF.SIDE		58		55		56		
GAIT		1		1		2		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		327	312	335	345	366	419	
		236	206	215	223	183	231	
PEAK T.A.E. (J)		75.85	55.00	81.36	71.91	91.42	91.55	
		45.65	26.54	47.87	43.27	52.53	60.52	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	56
POWER (NWTM)	H	236	256	235	254	247	242	
		125	175	116	161	139	165	
ENDURANCE (JOULES)		2937	3835	2912	3783	3332	3951	
		1904	2604	2112	3227	3062	3584	
G/H RATIO AFF SIDE		53		49		56		
PAIN (VAS):24H		8		4		0		
:PALPATION		8		7		2		
:MOVEMENT		8		7		0		
:WALKING		5		4		0		
:JOGGING		8	37	6	28	1	3	
SWELLING:AFF. SIDE		42		42		42		
:UNAFF.SIDE		42		43		43		
GAIT		2		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		249	318	241	299	286	310	
		178	238	189	281	274	313	
PEAK T.A.E. (J)		45.77	56.98	43.54	53.62	55.77	54.87	
		31.16	37.84	27.82	31.03	38.79	40.05	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	57
POWER (NWTM)	H	154	295	324	292	282	298	
		80	169	173	149	132	142	
ENDURANCE (JOULES)		2831	3430	3816	2993	4376	3774	
		1301	2397	2283	2151	2547	2905	
Q/H RATIO AFF SIDE		52		53		47		
PAIN (VAS):24H		7		2		0		
:PALPATION		7		5		0		
:MOVEMENT		6		2		0		
:WALKING		4		0		0		
:JOGGING		8	32	2	11	0	0	
SWELLING:AFF. SIDE		58		58		59		
:UNAFF.SIDE		60		60		60		
GAIT		3		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		338	332	371	294	391	322	
		144	239	234	220	231	255	
PEAK T.A.E. (J)		48.51	50.60	67.25	55.77	78.66	51.67	
		22.70	32.42	32.71	30.59	32.21	35.24	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	61
POWER (NWTM)	H	139	209	176	197	175	197	
		28	104	36	92	36	98	
ENDURANCE (JOULES)		1705	2397	2360	2353	2435	2264	
		349	1579	454	1349	625	1269	
Q/H RATIO AFF SIDE		20		20		20		
PAIN (VAS):24H		9		5		2		
:PALPATION		8		5		4		
:MOVEMENT		9		5		3		
:WALKING		8		6		0		
:JOGGING		10	44	10	31	9	18	
SWELLING:AFF. SIDE		58		58		59		
:UNAFF.SIDE		57		57		59		
GAIT		3		2		2		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		170	234	195	215	216	198	
		35	157	38	128	56	116	
PEAK T.A.E. (J)		22.89	35.91	30.18	36.59	33.42	37.52	
		7.78	26.48	8.38	23.16	10.68	16.43	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	62
POWER (NWTM)	H	100	158	121	139	145	150	
		20	76	15	67	19	75	
ENDURANCE (JOULES)		1403	1858	1548	1660	1597	1725	
		190	845	181	167	452	1068	
Q/H RATIO AFF SIDE		20		12		13		
PAIN (VAS):24H		7		5		3		
:PALPATION		10		8		6		
:MOVEMENT		5		5		6		
:WALKING		5		4		2		
:JOGGING		10	37	9	31	8	25	
SWELLING:AFF. SIDE		38		39		38		
:UNAFF.SIDE		38		39		39		
GAIT		3		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		129	170	134	150	142	153	
		18	77	16	77	39	96	
PEAK T.A.E. (J)		23.52	31.49	21.28	26.63	23.82	23.88	
		5.40	14.16	4.44	12.23	6.61	15.87	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	64
POWER (NWTM)	H	225	256	207	254	233	273	
		45	161	58	149	73	186	
ENDURANCE (JOULES)		2981	3279	3320	3493	3500	3322	
		924	1949	1096	2027	1387	1721	
Q/H RATIO AFF SIDE		20		28		31		
PAIN (VAS):24H		4		4		1		
:PALPATION		10		3		3		
:MOVEMENT		4		5		2		
:WALKING		4		2		1		
:JOGGING		5	27	8	22	2	9	
SWELLING:AFF. SIDE		52		52		52		
:UNAFF.SIDE		52		52		52		
GAIT		2		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		276	302	317	310	312	295	
		87	188	105	189	127	161	
PEAK T.A.E. (J)		55.34	48.64	49.17	49.45	59.72	45.20	
		15.47	27.69	16.83	30.51	22.66	29.72	

MUSCLE TEST	M	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	65
POWER (NWTM)	H	196	100	189	207	214	222	
		99	118	99	106	128	123	
ENDURANCE (JOULES)		2715	2621	2461	2436	2838	2676	
		1602	1552	1236	1383	1840	2008	
Q/H RATIO AFF SIDE		50		53		60		
PAIN (VAS):24H		6		2		1		
:PALPATION		5		5		1		
:MOVEMENT		0		0		0		
:WALKING		0		0		0		
:JOGGING		7	18	5	12	1	3	
SWELLING:AFF. SIDE		62		62		62		
:UNAFF.SIDE		62		62		62		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		279	239	237	212	278	235	
		166	151	118	132	184	198	
PEAK T.A.E. (J)		43.31	40.90	41.49	30.12	44.06	35.71	
		23.75	21.20	19.21	17.94	29.64	23.48	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	67
POWER (NWTM)	H	292	251	185	250	299	265	
		95	153	130	161	182	186	
ENDURANCE (JOULES)		3597	3088	3521	3057	3793	3684	
		2087	2789	2843	2712	2984	3009	
Q/H RATIO AFF SIDE		33		46		61		
PAIN (VAS):24H		2		1		1		
:PALPATION		6		1		1		
:MOVEMENT		3		1		0		
:WALKING		3		0		0		
:JOGGING		7	21	2	5	0	2	
SWELLING:AFF. SIDE		57		57		57		
:UNAFF.SIDE		56		56		57		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		302	290	314	306	335	323	
		194	282	261	276	282	296	
PEAK T.A.E. (J)		46.84	49.97	47.50	67.89	70.89	73.42	
		30.38	34.65	34.93	41.03	41.42	42.69	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	68
POWER (NWTM)	Q	150	277	203	288	248	255	
		99	153	119	155	115	128	
ENDURANCE (JOULES)		2136	2971	2653	3011	3018	3456	
		1162	2095	2050	1928	1484	2321	
Q/H RATIO AFF SIDE		66		59		46		
PAIN (VAS):24H		7		5		2		
:PALPATION		9		9		4		
:MOVEMENT		8		5		2		
:WALKING		8		6		3		
:JOGGING		10	42	7	32	2	13	
SWELLING:AFF. SIDE		42		42		43		
:UNAFF.SIDE		43		43		43		
GAIT		2		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		203	309	243	287	261	317	
		119	220	203	196	139	218	
PEAK T.A.E. (J)		38.60	66.94	38.79	48.86	44.04	45.79	
		20.37	34.61	25.11	23.51	18.61	25.96	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	69
POWER (NWTM)	H	215	242	210	216	224	218	
		87	118	93	113	102	114	
ENDURANCE (JOULES)		2832	3225	2848	2879	3057	2611	
		1760	1873	1657	1697	1636	1475	
Q/H RATIO AFF SIDE		41		44		45		
PAIN (VAS):24H		4		4		0		
:PALPATION		7		5		2		
:MOVEMENT		5		5		1		
:WALKING		4		3		0		
:JOGGING		7	27	6	23	1	4	
SWELLING:AFF. SIDE		46		46		46		
:UNAFF.SIDE		46		46		46		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		257	299	266	284	306	252	
		175	193	174	171	175	146	
PEAK T.A.E. (J)		38.59	47.33	41.90	46.72	41.18	36.58	
		25.08	31.94	25.79	27.63	23.84	21.54	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	70
POWER (NWTM)	H	267	262	320	319	299	317	
		74	138	123	175	131	162	
ENDURANCE (JOULES)		2845	3827	3351	3588	3634	3523	
		600	1651	1421	1810	1895	1768	
Q/H RATIO AFF SIDE		28		39		71		
PAIN (VAS):24H		6		2		0		
:PALPATION		8		3		2		
:MOVEMENT		6		4		0		
:WALKING		5		0		0		
:JOGGING		9	34	6	15	2	4	
SWELLING:AFF. SIDE		59		59		59		
:UNAFF.SIDE		60		59		60		
GAIT		3		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		269	318	298	341	318	340	
		58	147	129	175	178	180	
PEAK T.A.E. (J)		43.46	39.10	53.25	55.15	43.84	55.51	
		12.59	26.10	27.98	26.25	26.06	32.56	

MUSCLE TEST	P	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	71
POWER (NWTM)	H	215	273	266	250	253	281	
		79	143	104	165	139	181	
ENDURANCE (JOULES)		3244	3631	3756	3752	4021	3871	
		1365	2187	1252	2350	2263	2561	
Q/H RATIO AFF SIDE		37		39		55		
PAIN (VAS):24H		3		1		0		
:PALPATION		8		4		1		
:MOVEMENT		3		2		0		
:WALKING		3		2		0		
:JOGGING		8	25	5	14	1	2	
SWELLING:AFF. SIDE		59		58		58		
:UNAFF.SIDE		59		58		58		
GAIT		3		2		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		281	344	336	341	371	363	
		132	232	119	227	214	264	
PEAK T.A.E. (J)		44.93	48.50	55.41	47.51	56.97	58.36	
		24.12	31.69	25.60	32.58	32.61	36.49	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	72
POWER (NWTM)	H	193	230	188	228	196	218	
		90	136	105	138	108	136	
ENDURANCE (JOULES)		2518	2694	3189	3313	3325	3314	
		1352	1385	1847	2272	2075	2059	
Q/H RATIO AFF SIDE		47		56		55		
PAIN (VAS):24H		6		2		1		
:PALPATION		6		2		2		
:MOVEMENT		4		1		0		
:WALKING		3		2		1		
:JOGGING		8	27	2	9	1	5	
SWELLING:AFF. SIDE		55		55		55		
:UNAFF.SIDE		55		55		55		
GAIT		2		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		260	291	321	321	342	328	
		131	172	191	218	210	206	
PEAK T.A.E. (J)		36.39	47.46	42.55	45.21	43.62	45.26	
		22.22	33.26	27.76	32.39	32.16	36.37	

MUSCLE TEST	D	AFD1	UNAD1	AFD3	UNAD3	AFD7	UNAD7	75
POWER (NWTM)	H	232	257	261	271	236	235	
		121	117	137	141	169	144	
ENDURANCE (JOULES)		2589	3162	3456	3647	3046	3114	
		1898	1862	2014	2454	2135	2099	
Q/H RATIO AFF SIDE		52		52		72.		
PAIN (VAS):24H		9		4		0		
:PALPATION		9		9		6		
:MOVEMENT		5		1		0		
:WALKING		6		5		1		
:JOGGING		10	27	7	23	3	4	
SWELLING:AFF. SIDE		55		55		55		
:UNAFF.SIDE		55		55		55		
GAIT		1		1		1		
MUSCLE TEST CONT'D								
AVERAGE POWER (W)		246	309	299	307	286	291	
		191	198	193	234	206	206	
PEAK T.A.E. (J)		43.68	48.71	67.58	73.02	65.12	66.00	
		26.46	28.44	29.41	32.50	28.15	22.84	

APPENDIX 4

SEVERE INJURY DATA

EVERE INJURY DATABASE hamstring injuries

T NO	POWER			ENDURANCE									SWELLING			PAIN			SUBJ	OBJ	TREAT
	PTD1	PTD3	PTD7	TWD1	TWD3	TWD7	APD1	APD3	APD7	PTAED1	PTAED3	PTAED7	SWD1	SWD3	SWD7	PD1	PD3	PD7	SEV.	SEV.	
I	0.96	0.94	0.99	0.93	0.90	1.00	0.89	0.89	0.97	0.88	0.98	0.91	1.00	1.00	1.00	10	2	0	1	1	1
IV	0.60	0.78	0.83	1.08	0.86	0.96	1.08	0.89	1.01	1.06	0.81	0.96	0.98	1.00	0.98	11	4	2	1	1	1
VII	1.49	1.65	1.15	0.89	1.32	0.95	0.83	1.34	2.31	1.10	1.28	0.87	1.02	1.00	0.98	26	12	6	2	1	1
IX	0.59	0.58	0.85	0.62	0.53	0.84	0.63	0.52	0.87	0.69	0.65	1.02	1.02	0.96	0.96	26	6	4	2	0	0
XIII	1.21	1.17	1.16	1.48	1.16	1.11	1.38	1.23	1.07	1.35	1.23	1.04	1.00	1.00	1.00	5	0	1	1	1	0
1	0.33	0.40	0.73	0.31	0.36	0.78	0.27	0.33	0.78	0.52	0.47	0.80	1.04	1.04	1.00	44	28	15	2	0	2
3	0.33	0.67	0.94	0.05	0.51	0.53	0.06	0.51	0.54	0.27	0.69	0.82	1.02	1.00	1.00	46	19	1	3	0	0
4	0.96	0.90	1.02	0.70	0.96	1.15	0.66	1.00	1.08	0.23	0.91	0.41	1.00	1.00	1.00	10	3	0	1	1	0
5	0.43	0.66	0.72	0.30	0.83	1.33	0.32	0.88	1.42	0.69	0.67	1.20	1.02	1.00	1.00	29	16	5	2	0	2
6	0.23	0.40	0.73	0.29	0.59	0.95	0.88	0.98	1.04	0.96	1.00	1.03	1.04	1.00	1.00	42	34	7	2	0	2
8	0.88	0.85	1.05	0.77	0.52	0.60	0.56	0.90	0.95	0.00	0.73	0.72	1.02	1.00	1.00	27	17	5	2	1	2
9	0.55	0.65	1.09	0.52	0.75	1.15	0.53	0.77	1.22	0.78	0.73	0.85	1.05	1.02	1.00	26	10	4	2	0	1
10	1.01	1.01	1.02	1.49	1.36	1.21	1.41	1.42	1.43	1.31	1.28	1.18	0.98	1.00	1.00	5	1	2	1	1	0
14	0.94	0.91	0.94	1.18	0.98	0.72	1.14	0.97	0.75	0.88	0.98	0.47	1.04	1.02	1.00	24	21	5	1	1	0
15	0.85	1.09	1.02	1.21	1.01	0.79	1.18	0.97	0.99	0.86	0.83	0.83	1.00	1.00	1.00	23	14	3	2	1	1
16	0.55	0.60	0.65	0.75	0.75	0.86	0.75	0.80	0.87	1.04	1.00	0.86	0.96	0.98	1.00	17	12	5	1	1	0
17	0.70	0.85	0.87	0.38	0.59	0.74	0.38	0.58	0.75	0.43	0.50	0.63	0.98	1.02	1.00	36	17	4	2	1	0
18	0.72	1.00	0.86	0.95	1.22	1.17	1.00	1.20	1.17	0.99	1.12	1.05	1.02	1.00	0.98	33	16	8	2	1	0
19	0.27	0.39	0.37	0.22	0.34	0.49	0.22	0.30	0.48	0.29	0.36	0.65	1.02	1.02	1.00	29	32	12	2	0	1
20	1.01	1.01	1.00	1.08	1.11	0.96	1.08	1.13	0.98	1.06	0.94	1.06	1.00	1.02	1.00	10	13	3	1	1	2
22	0.87	1.08	1.08	1.10	0.92	0.95	1.15	0.05	0.99	0.78	1.06	1.04	1.00	1.00	1.00	20	4	3	1	1	2
27	0.76	0.80	0.80	0.76	0.93	1.07	0.77	0.93	1.01	0.84	0.96	1.03	0.98	0.98	1.00	19	10	12	2	1	2
28	0.44	0.75	0.93	0.69	0.63	0.87	0.61	0.62	0.97	0.62	0.86	0.99	1.02	1.00	1.00	24	10	4	2	0	2
29	0.83	0.94	0.97	0.94	0.90	1.17	0.88	0.85	0.99	0.94	0.96	0.71	1.00	1.00	1.00	14	8	13	1	1	1
30	0.81	1.01	1.02	1.00	0.98	1.05	0.99	1.09	1.13	1.18	1.45	1.34	1.00	1.00	1.00	15	6	4	2	1	2
38	0.56	0.63	0.82	0.78	0.80	0.80	0.76	0.82	0.79	1.16	2.92	0.82	0.98	0.98	0.98	29	15	6	2	0	1
41	0.45	0.55	0.58	0.55	0.64	0.69	0.53	0.68	0.68	0.77	0.68	0.44	1.03	1.03	1.03	38	25	8	3	0	0
42	0.87	1.03	0.88	0.97	0.84	1.03	0.98	0.87	1.17	1.02	0.86	1.19	1.03	1.03	1.00	29	21	19	2	1	2
44	0.73	0.77	1.00	0.63	0.74	0.90	0.69	0.68	0.91	0.74	1.05	0.39	1.04	0.98	1.00	32	13	3	3	1	1
45	0.86	0.79	1.04	0.47	0.68	0.88	0.48	0.74	0.88	0.78	0.78	0.89	0.98	0.98	0.95	37	26	12	2	1	0
53	0.56	0.98	1.06	0.77	0.92	1.02	0.76	0.91	1.02	0.74	0.84	1.09	1.00	1.00	1.00	28	24	23	2	0	1
55	0.93	0.88	0.91	0.84	0.80	0.78	1.15	0.96	0.79	1.72	1.11	0.87	0.98	1.02	1.04	8	15	27	1	1	2
56	0.71	0.72	0.84	0.73	0.65	0.85	0.75	0.67	0.88	0.82	0.90	0.97	1.00	0.98	0.98	37	28	3	1	1	2
57	0.47	1.16	0.93	0.54	1.06	0.91	0.60	1.06	0.91	0.70	1.07	0.91	0.97	0.97	0.98	32	11	0	2	0	0
61	0.48	0.79	0.90	0.56	0.82	0.96	1.73	1.23	0.93	0.90	1.04	0.98	1.02	1.02	1.00	44	31	18	3	0	1
62	0.26	0.22	0.25	0.22	1.08	0.42	0.23	0.21	0.41	0.38	0.36	0.42	1.00	1.00	0.97	37	31	25	3	0	2
64	0.28	0.39	0.44	0.47	0.54	0.81	0.46	0.56	0.79	0.56	0.55	0.76	1.00	1.00	1.00	27	22	9	2	0	1
65	0.84	0.93	1.04	1.03	0.89	0.92	1.10	0.89	0.93	1.12	1.07	1.26	1.00	1.00	1.00	18	12	3	1	1	1
67	0.62	0.81	0.98	0.75	1.05	0.99	0.69	0.95	0.95	0.88	0.85	0.97	1.02	1.02	1.00	21	5	2	2	1	0
69	0.74	0.82	0.89	0.94	0.98	1.11	0.96	1.02	1.20	0.79	0.93	1.11	1.00	1.00	1.00	27	23	4	2	1	2
70	0.54	0.70	0.81	0.36	0.79	1.07	0.39	0.74	0.99	0.48	1.07	0.80	0.98	1.00	0.98	34	15	4	3	0	2
71	0.55	0.63	0.77	0.62	0.53	0.88	0.57	0.52	0.81	0.76	0.79	0.89	1.02	1.00	1.00	25	14	2	2	0	0
72	0.66	0.76	0.79	0.98	0.81	1.01	0.76	0.88	1.02	0.48	1.07	0.80	1.00	1.00	1.00	27	9	5	2	1	2
75	1.03	0.97	1.17	1.02	0.82	1.02	0.96	0.82	1.00	0.93	0.90	1.23	1.00	1.00	1.00	27	23	4	2	1	2

APPENDIX 5

S.A.D.F. CONSENT

RESTRICTED

6

SG(3)R/104/10/5/3

SAMS Headquarters
Private Bag X202
Pretoria
0001

19 December 1986

Telephone : 21-3611
Extension : 166
Enquiries : Brig Reinaldo

MILITARY HOSPITAL
29 12 1986
WYNBERG, K.P./C.P.
2 MILITARY HOSPITAL

RESEARCH: SPORTING INJURIES

5

1. 2 MH/B/104/10/5/3 dd 4 Dec 86 refers.

2. Permission is granted for this project, as requested. The protocol must be adhered to, and if published the SAMS must be credited.

Signed

(BRIG E.O. PRINSLOO)
SURGEON GENERAL : LT GEN
EOP/ACV

DISTR

For Action

OC
2 Mil Hosp

(Cmdt Cloete)

9.1.87

APPENDIX 6

STATISTICS

PH With transformation 0
****

ource	df	MS	f	P
	2	162.6599	2.174981	.000002
	2	3809.158	50.93354	0
Q	4	28.69232	.3836547	.910459
ithin	123	74.78684		

Bartlet's criteria 19.59775 with df=
OR F(MAX)= 0

TABLE OF MEANS with sd in brackets
==========

24.38 (8.97) 15.31 (9.03) 7.85 (6.6)

.....
25.36 (12.23) 12.57 (8.310001) 3.86 (3.38)

.....
26.82 (9.96) 17.82 (8.68) 8.76 (7.7)

.....

---

artlett criteria= 19.59775 with df= 10
suggests that hom. of var. can be accepted at p= .9786746

cceptance Intervals based on MEANS:

model 1= 6.363248
model 2= 6.826683

cceptance Intervals based on MEANS:

model 1= 8.405506
model 2= 9.017678

he least significant deviation at p= .05 is= 63.31688
with a Bonferonni t-value of 2.425

he least significant deviation at p= .01 is= 78.08971
with a Bonferonni t-value of 2.990791

HAMS SWELL With transformation 0
****

Source	df	MS	f	P
	2	2.830984E-04		.9702716
.544873				
Q	2	1.08406E-03	3.715431	.007087
PQ	4	3.45242E-05	.1183258	1
Within	123	2.917724E-04		

Bartlet's criteria 16.55688 with df=
OR F(MAX)= 0

TABLE OF MEANS with sd in brackets
==========

1.008 (.02)	1.002 (.012)	.995 (8.999999E-03)
1.002 (.024)	.998 (.02)	.994 (.018)
1.007 (.018)	1.004 (.015)	.998 (.013)

Bartlett criteria= 16.55688 with df= 10
suggests that hom. of var. can be accepted at p= .9503062

Acceptance Intervals based on MEANS:

model 1= 1.256864E-02
model 2= 7.488395E-03

Acceptance Intervals based on MEANS:

model 1= .0166025
model 2= 9.891763E-03

The least significant deviation at p= .05 is= .1250631
with a Bonferonni t-value of 2.425

The least significant deviation at p= .01 is= .1542422
with a Bonferonni t-value of 2.990791

```
PT With transformation  0
*******************************

ource          df              MS              f           P
               2               5.570135E-02                1.893281
.000024
               2               3.868782E-02                1.314993
.022041
Q              4               2.494719E-02                .8479512
1
ithin          123             2.942055E-02

  Bartlet's criteria  87.46601 with df=
        OR F(MAX)= 0


------------------------------------------------------------------
TABLE OF MEANS  with sd in brackets
==================================

.951 ( .308 )      .918 ( 7.900001E-02 )      .965 ( .091 )

.............
.946 ( .165 )      1.065 ( .339 )      1.007 ( .075 )

.............
.894 ( .105 )      .955 ( .091 )      .981 ( .069 )

.............

------------------------------------------------------------------
artlett criteria= 87.46601  with df= 10
suggests that hom. of var. can be accepted at p= 1

                                    model 1= .1262094
                                    model 2= .2012972

                                    model 1= .1667158
                                    model 2= .2659027

he least significant deviation at p= .05  is= 1.255834
 with a Bonferonni t-value of  2.425
```

PT With transformation 0
****

ource	df	MS	f	P
	2	.0784666	1.399456	.007227
	2	.790328	14.09554	0
Q	4	7.195361E-02		1.283296
.033059				
ithin	123	5.606938E-02		

Bartlet's criteria 8.798534 with df=
OR F(MAX)= 0

TABLE OF MEANS with sd in brackets
==========

.692 (.308) .841 (.312) .899 (.23)

.....

.483 (.2) .823 (.208) .871 (.165)

.....

.676 (.251) .769 (.235) .859 (.198)

.....

---

artlett criteria= 8.798534 with df= 10
suggests that hom. of var. can be accepted at p= .8082512

model 1= .1742325
model 2= .3418639

model 1= .2301517
model 2= .4515836

The least significant deviation at p= .05 is= 1.733683
with a Bonferonni t-value of 2.425

The least significant deviation at p= .01 is= 2.138179
with a Bonferonni t-value of 2.990791

TW With transformation 0
****

ource	df	MS	f	P
	2	5.237322E-03		8.093787E-02
.923326				
	2	.3009026	4.650166	.001916
Q	4	8.774325E-03		.1355989
1				
ithin	123	6.470792E-02		

Bartlet's criteria 16.14236 with df=
OR F(MAX)= 0

TABLE OF MEANS with sd in brackets
==========

.776 (.268)	.829 (.221)	.917 (.168)
.....		
.753 (.391)	.859 (.277)	.906 (.194)
.....		
.728 (.301)	.802 (.194)	.933 (.201)
.....		

Bartlett criteria= 16.14236 with df= 10
suggests that hom. of var. can be accepted at p= .9447582

model 1= .1871738
model 2= .1193806

model 1= .2472464
model 2= .1576953

The least significant deviation at p= .05 is= 1.862454
with a Bonferonni t-value of 2.425

The least significant deviation at p= .01 is= 2.296995
with a Bonferonni t-value of 2.990791

APH With transformation 0
****

ource	df	MS	f	P
	2	8.260606E-02		.9073192
.524891				
	2	.4337862	4.764573	.001648
Q	4	3.654905E-02		.4014433
1				
ithin	123	.0910441		

Bartlet's criteria 11.01368 with df=
OR F(MAX)= 0

TABLE OF MEANS with sd in brackets

.856 (.361)	.854 (.253)	1.026 (.405)
.....		
.733 (.365)	.87 (.284)	.91 (.216)
.....		
.753 (.297)	.769 (.298)	.984 (.206)
.....		

---

artlett criteria= 11.01368 with df= 10
suggests that hom. of var. can be accepted at p= .844472

cceptance Intervals based on MEANS:

model 1= .22202
model 2= .2436492

cceptance Intervals based on MEANS:

model 1= .2932765
model 2= .3218473

he least significant deviation at p= .05 is= 2.209189
with a Bonferonni t-value of 2.425

he least significant deviation at p= .01 is= 2.724628
with a Bonferonni t-value of 2.990791

```
PTAEH With transformation  0
**********************************

ource          df              MS              f          P
                2              6.520241E-02                .6808156
.558568
                2              .1752518       1.829904     .126219
Q               4              7.447906E-02                .7776784
1
ithin           123            9.577103E-02

   Bartlet's criteria  30.05709 with df=
          OR F(MAX)= 0

-------------------------------------------------------------------

 TABLE OF MEANS  with sd in brackets
 ===================================

.856 ( .234 )      1.034 ( .591 )      .853 ( .205 )

 ..............
.791 ( .319 )      .894 ( .222 )       .829 ( .238 )

 ..............
.792 ( .36 )      .89 ( .239 )       .981 ( .215 )

 ..............

-------------------------------------------------------------------

artlett criteria= 30.05709  with df= 10
suggests that hom. of var. can be accepted at p= .9993681

cceptance Intervals based on MEANS:

                                        model 1= .2277106
                                        model 2= .3478116

cceptance Intervals based on MEANS:

                                        model 1= .3007935
                                        model 2= .4594402

he least significant deviation at p= .05  is= 2.265813
  with a Bonferonni t-value of  2.425
```

- - - - - - - - - - - O N E W A Y - - - - - - - - - - -

Variable PD7
By Variable DRUG

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob
Between Groups	2	237.8824	118.9412	2.5154	.116
Within Groups	14	662.0000	47.2857		
Total	16	899.8824			

Variable PD7
By Variable DRUG

Multiple Range Test

LSD Procedure
Ranges for the .050 level -

3.03 3.03

The ranges above are table ranges.
The value actually compared with Mean(J)-Mean(I) is..
4.8624 * Range * Sqrt(1/N(I) + 1/N(J))

(*) Denotes pairs of groups significantly different at the .050 level

---

Variable PD7
(Continued)

```
 3.0000     Grp 0
10.0000     Grp 2
12.0000     Grp 1       *
-------------------------------------------------------------------------------
----
```

APPENDIX 7

DICLOFENAC TABLET DISSOLUTION EXPERIMENTATION

WARNER LAMBERT_CANADA INC.

MEMORANDUM

To : Dr. P. Albright

From : Mr. J.K.S. Lee

Date : Feb. 4, 1987

Subject : Voltaren 25 mg Tablet --- Dissolution

In November, 1986 2 samples of Voltaren 25 mg tablets (L)633900 and tablets in empty capsule were submitted for dissolution testing. Dissolution testing showed that capsule shells slowed down dissolution rate (see memo Nov. 27 ,1986 to N. Grewal).

The tablets were re-packed in capsule shells containing Avicel PH 101. The objective is to check if Avicel will prevent the softened capsule shells from wrapping the tablet and slows down dissolution rate.

Results show that tablets and tablets in capsule shell containing Avicel PH 101 dissolve at about the same rate,(see Table I & II).

cc: Mr. N. Grewal
Mr. S. Ambike
Mrs. G. Cukic
M. Kopaniak

Signed by candidate

Signature Removed

Table I: Dissolution of Voltaren 25 mg tablet
Voltaren 25 mg tablet (L) 633900
Method : USPXXI p. 627 for
Meclofenamate sodium capsule
same for Meclomen capsule
Apparatus : Paddle
Dissolution medium : pH 8.0 phosphate buffer
at 37 C, 900 mL.

Tablet #	10 mins.	20	30	45	60
1	3.8 %	7.1	36.4	90.1	95.3
2	4.6	4.8	16.9	60.6	93.7
3	5.5	4.6	29.3	86.0	97.0
4	5.6	3.8	16.7	52.1	96.6
5	4.5	5.0	29.7	75.8	95.5
6	5.8	5.3	23.8	67.1	95.5
Average :	5.0	5.1	25.5	72.0	96.0

Book Reference : GC-367-19145

Date : Feb. 5, 1987

Table II: Dissolution of Voltaren 25 mg tablet in capsules filled with Avicel Ph101
Voltaren 25 mg tablet (L) 633900
White OP 999 Body and cap. Hard gelatin capsule
Method : USPXXI p. 627 for Meclofenamate sodium capsule same for Meclomen capsule
Apparatus : Paddle
Dissolution medium : pH 8.0 phosphate buffer at 37 C, 900 mL.

Tablet #	10 mins.	20	30	45	60
1	3.3 %	5.2	30.1	86.1	98.5
2	2.8	3.5	6.2	37.9	98.2
3	3.9	5.5	26.1	98.8	99.3
4	4.6	6.2	18.4	86.1	104.8
5	8.8	29.1	33.6	69.9	93.2
6	3.6	4.1	6.3	29.5	100.1
Average :	4.5	8.9	20.1	68.1	99.0

Book Reference : GC-367-19147

Date : Feb. 5, 1987