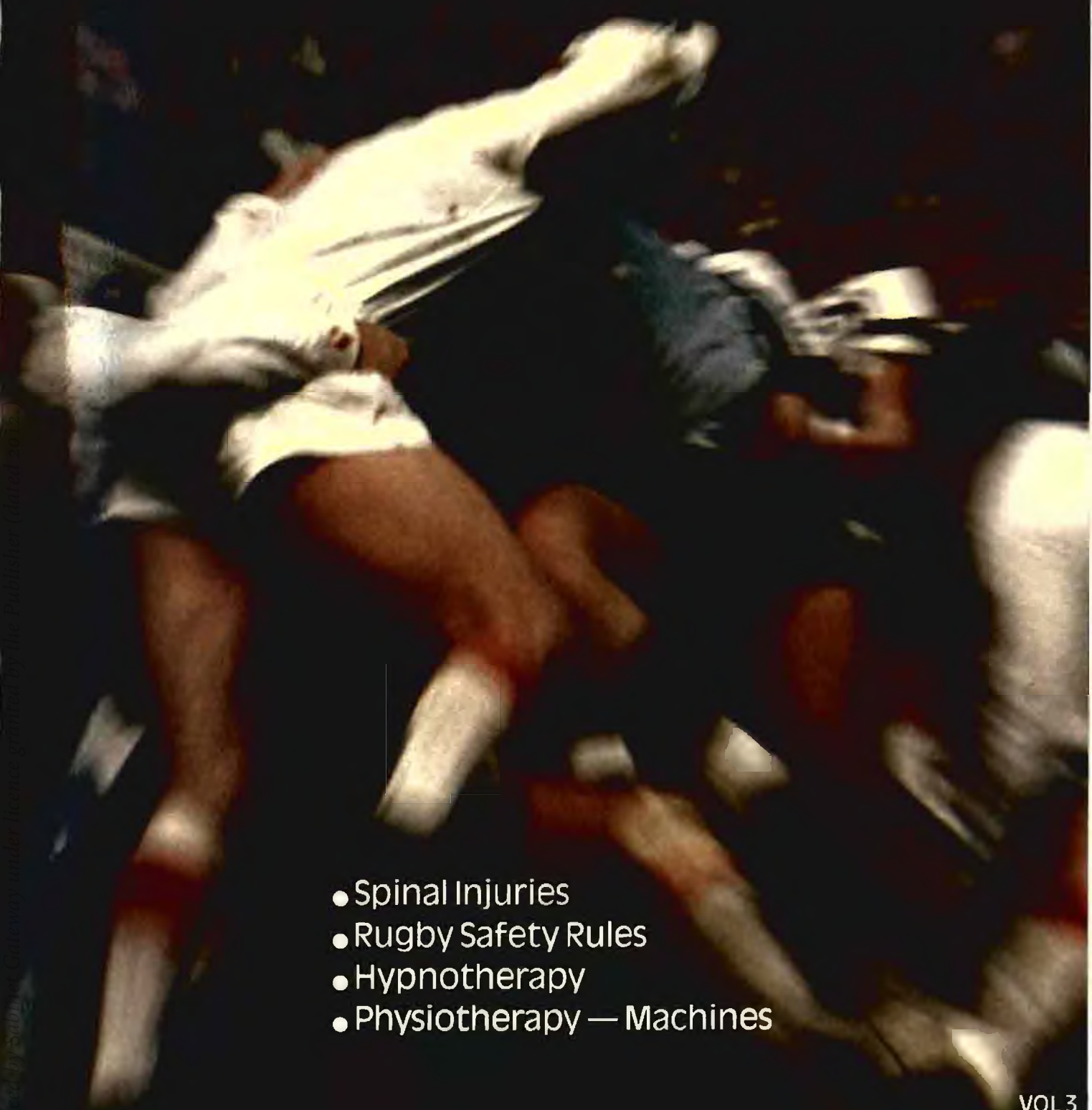


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SPORTS MEDICINE

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SAFETY IN RUGBY

CLIVE NOBLE MB CHB, FCS (SA)

Safety in rugby — legal aspects and new rules

Rugby is a collision sport. This means that the very nature of the game predis-

poses to injury and sometimes serious injury. Statistically it has been shown that serious injury is fortunately uncommon. Recently there have been charges of assault laid against one player by another. With a growing public awareness concerning litigation, the International Rugby Board have reminded responsible authorities to see that all reasonable steps be taken to minimize the possibility of becoming a defendant in a lawsuit by identifying and promulgating "safe procedures". These "safe procedures" should include 1) the provision of written material and the showing of safety films. 2) Arranging for a person adequately trained in First Aid to be present at every match. 3) Coaches must teach safety techniques in rugby and ensure proper conditioning takes place for every player. 4) Safety equipment should be present and inspected regularly to make sure it is capable of providing the function for which it is desired. All equipment should be reconditioned and replaced when appropriate. 5) Basically everyone responsible for supervision of rugby should be aware of the mechanics of the cervical spine injuries and the danger signs which often precede cervical complications. Players should be warned that lowering their heads and charging into an opponent, or diving into a maul or ruck, can cause fracture or dislocation of the cervical spine and result in quadriplegia. 6) Players should be of suitable build and adequately prepared for the position for which they are selected. They should report any previous neck injury or congenital abnormality.

These safety procedures are not only important to avoid litigation but are also fundamental in the education of any rugby team. At the present stage in South Africa, we are in some instances, a long way from achieving basic safety procedures. At school level for example, many



games are played without the presence of adequately trained First Aiders. Would it not be a good idea for those boys who do not play rugby, for various reasons, to be properly trained and to accompany their team to all games as one of the team. In co-educational schools, the girls may fill the role of First Aiders. In many cases, safety equipment is entirely lacking or, at school level, is only available for the 1st and 2nd team games. In some provinces, proper coaching in safety procedures and correct selection of players, is entirely lacking at the lower levels of club rugby and schools rugby. It is not uncommon for a player to be put into the front row of the scrum untrained and with a neck like a chicken. It must be remembered that most of the significant neck injuries take place in the lower levels of rugby.

RULE CHANGES

For many years, rugby rules were to an extent, vastly unaltered as regards safety procedures. Fortunately, at long last, the International Rugby Board (I.R.B.) have woken up to the inherent dangers of rugby and via their medical committee, are now working towards making this great game safer. New rules will be applicable in South Africa only from next year which will improve safety and include 1) all tackles above shoulder height will be penalized. This rule was initially changed so that referees could decide for themselves if they thought that the high tackle was dangerous or not. Unfortunately, some horrendous high tackles were left unpenalized. This will be an excellent rule. 2) Touch judges shall point out foul play. This is an amendment of a recent rule that touch judges may point out foul play. Unfortunately, many touch judges seemed to go blind, even at provincial and international level, when obvious foul play occurred in front of them. If properly applied, this will be an excellent rule. 3) The scrum will now be altered so that the engagement of front rows in the scrum will be staggered. This means that the front rows will initially CROUCH, then they will TOUCH their opponent. Following this they will PAUSE and then they will ENGAGE. This means that the initiation of the scrum will be more controlled instead of the present charging into one another. This obviously has merit, but whether it will stop severe neck injuries remains to be seen. In essence, will this stop collapsing of the scrum? There are three main factors which are responsible for neck injuries in set scrummings a) the stability of the scrum b) the extent, duration and direction of the force acting on the necks of the front row and c) the strength of the necks of the front row. This new rule may well help to give the scrum more stability because more often than not, the scrum collapses before the ball has been put in. Staggering the formation of the scrum may also be



necessary. This means the front rows would go down first, then the locks and then the loose forwards. Only experimentation and scientific analysis will provide the answer here. As regards the extent, duration and direction of the forces acting on the necks of the front row, only the last named has been tackled, i.e. the hips of the scrummer must be lower than his shoulders. This will prevent, to some extent, collapse of the scrum. If the forces acting on the neck of the front row are too great, then collapse will occur despite the stability of the scrum. This is most likely to occur in the lower level rugby in schools, where the necks and backs of the front row are not strong enough. It should therefore be considered that at this level of rugby, the forces could be reduced by decreasing the number of players engaged in the scrum e.g. a five man scrum. We have short lineouts so why not five man scrums? As regards the duration of the scrum, the longer it lasts,

the more danger of collapse. Scrums should not be allowed to go down until the scrum half has the ball and is ready for the put-in. As regards neck strength, all players, from the most junior, should be given exercises for neck and back strength no matter what position they play. 4) Wheeling of the scrum will only allow a 90° turn. It is uncertain whether this will have a significant effect on safety in the scrum. The forced wheel i.e. where the one front row stops pushing and moves rapidly backwards, is dangerous in that it makes the scrum unstable. The significance of wheeling of the scrum will still have to be fully elucidated. 5) Players entering the loose scrum must have their shoulders higher than their hips. This is a good rule in preventing excessive flexion force to the neck but it will be extremely difficult to apply it. With the changes I have mentioned above, it appears that good progress is being made in safety in rugby.

DESTRUCTIVE BEHAVIOUR PATTERNS

DR C TREVOR MODLIN MB, BCh. (Witwatersrand)

M

anagement of destructive behaviour patterns in a sportsman by hypnotherapy

1. THE PROBLEM

At the time of this case study, Mr X was a 28 year old hockey player. His ability was never in question — he played at Senior Inter-Provincial level and as far as his skills, fitness, motivation and tactical knowledge of the game were concerned he was not lacking — indeed, he had few peers. However he had never achieved the ultimate accolade of a Springbok Cap. He is intelligent and has full insight to the extent that he subjected himself to a brutally honest self-appraisal and came to the conclusion that what held him back from full recognition was his lack of emotional control on the field. He admitted that an error by himself, a team-mate or an error by an umpire upset him so much that despite his understanding before and after the game, he lost control while on the field. He became frustrated and angry and this aggression was destructive to his own game, the team effort and invited sharp reaction from umpires. As Professor Potgieter has pointed out, Mr X placed unreasonable demands on himself for perfection. This demand extended to his team mates and the performance of the umpires. His SUBCONSCIOUS response (for he was fully aware after the fact but unable to maintain self control in the heat of the moment) was aggression which once displayed tended to escalate with the next incident.

2. DISCUSSION WITH MR X

We explored different ways of handling his problem — even to the matter of acceptance of his already significant achievements and that a Springbok Cap might be beyond him at the age of 28. His motivation held sway — he dearly wanted a last opportunity. Hypnosis was then discussed as a means of treatment, in particular the nature of hypnosis, his expectations and that of my own. A course of three one-hour sessions

was agreed to with an opportunity to then review progress.

3. THE FIRST SESSION

Such was his motivation that hypnosis was induced with little difficulty using eye fixation. The level of trance was deepened by a reverse arm levitation and further deepened by a reverse countdown. At this stage he was in a medium trance and I then proceeded with Hartland's Ego Reinforcement Pattern.

He was then asked whether or not his subconscious mind felt he could alter his impulsive behaviour on the field of play. His auto-motor response being affirmative, direct suggestions were then made that in the event of an incident that would previously have resulted in loss of control, his subconscious mind would immediately be alerted to that fact and

automatically act with maximum control. It was suggested that this choice of positive control would result in a feeling of great power and confidence. Protective suggestions were then made as regards non-clinical hypnosis and he was given a further suggestion to allow rapid in-

duction for the next session. He was then taught to 'wake' himself up.

4. THE SECOND SESSION

The patient reported a feeling of well-being since the last session. Hypnosis was rapidly induced and intensified to a deep level. This session was largely repetitive except that it was also suggested that not only would his subconscious mind respond favourably, but that EACH subsequent incident would further reinforce this positive response not only at an emotional level but also at the level of his skills AND his enjoyment of the game.

Using imagery, he was asked to remember a game in which he had responded in the 'old' fashion to stress. He was asked to replay specific incidents with his

new capabilities and reported that he coped comfortably without aggression. At this time and with his agreement, a technique for self-hypnosis was suggested, he was awoken and requested to induce self-hypnosis. This he achieved admirably and he was given a tape to use under self-hypnosis on a daily basis.

5. THE THIRD SESSION

Mr X reported that the

league game he had played since the last session was 'fantastic' and that team-mates and opposition members had commented on his performance. This had doubly encouraged him that he was making progress.

This session was once more a repeat with the addition of imagery to improve his skills and his 'vision' on the field.

Imagery was also used to visualise and feel the sensation of winning and the confidence that resulted.

He was encouraged to induce self-hypnosis, if only for a few

WANT TO



minutes, prior to a game and concentrate on ego-reinforcement and confidence.

6. 'TOP-UP' SESSION

36 hours before he was due to leave for the Inter-Provincial Tournament, he developed a groin strain during a training session. This was a severe blow to his confidence. This session therefore concentrated on a technique of pain control which he could apply under self-hypnosis. He was amazed to find that he could in fact achieve this completely. Nevertheless, he was warned to use this only for the duration of each game and he was prescribed an anti-inflammatory agent and referred for physiotherapy prior to him leaving for the tournament.

7. RESULTS

I was roused from sleep at 1,30 am six days later by the telephone. A very happy and obviously inebriated Mr X was on the line. He had played a blinder of a tournament and... had been selected for the 'Bok' Squad.

It was one occasion I didn't mind being woken up by a drunken phone call!

8. OBSERVATIONS

While this case study worked to perfection, there are many pitfalls in the application of hypnotherapy in sport.

Points to consider:

1. It is important that the therapist is au fait with the sport for maximum advantage.
2. It is important that a realistic discussion take place prior to hypnotherapy:

too many sportspeople expect a miracle of mumbo-jumbo that will remove all their problem areas and make them kings.

3. It must not detract from the necessary dedication.
4. It is important, if one is to help and not be destructive, that hypnotherapy is undertaken in consultation with the coach — especially in the area of skills.
5. The main strength of hypnotherapy, I feel, is in the area of building confidence. Not in an arrogant fashion, but with quiet and sure inner strength which will allow the sports person to perform at an optimal level.

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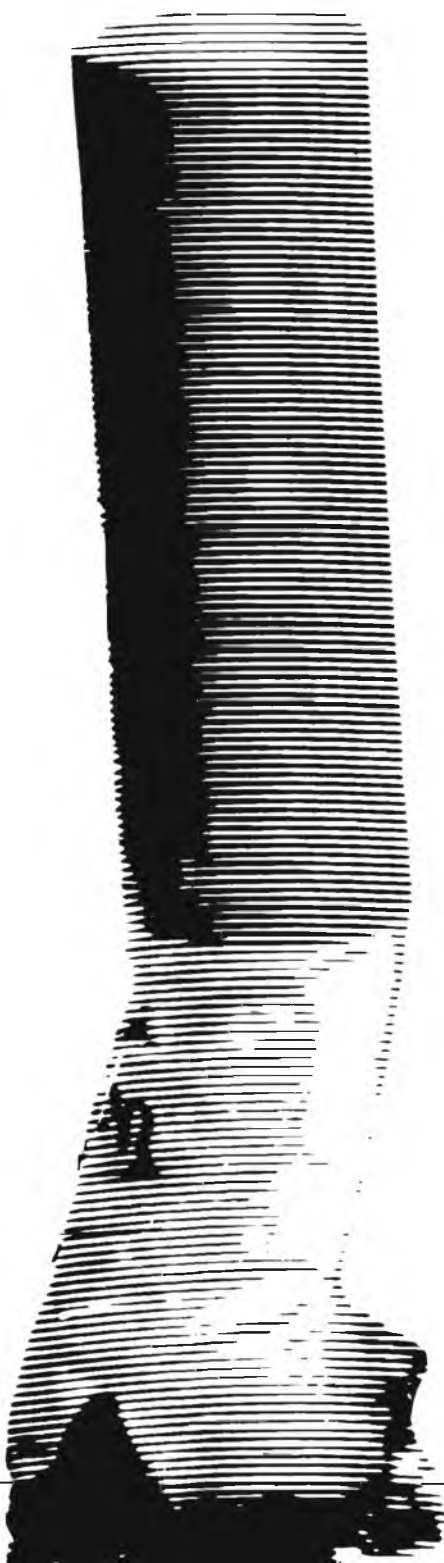
Prof J Potgieter

- 'Rasioneel-emotiewe terapie vir sportlui'
- J. of SA Sports Medicine Assoc. Vol 2 No 4

ANTIROOK PROGRAM NODIG!

The main objects of the South African Sports Medicine Association are the advancement of the science and art of sports medicine, and to foster, promote, support, augment, develop and encourage investigative knowledge of sports medicine and its ramifications. The Sports Medicine journal provides an ideal forum to publish original research articles in sports medicine, and to disseminate knowledge in the field of health promotion through exercise and a healthy lifestyle. We are proud to acknowledge that more and more original research articles are offered for publication in this journal. It is of particular significance to take note of the fact that this journal qualifies for subsidies for research output for universities as outlined in the NASOP 02-014 (87/7) report. This will motivate academics in South Africa to publish their research findings in the Sports Medicine Journal to the mutual benefit of all our members in the medical and para-medical field concerned with the practice and administration of sport in our country. We would like to keep our articles as **short and informative** as possible, and aimed at the General Practitioner involved in the total care of the athlete. The regular contributions on nutrition and physiotherapy in our journal fulfil a great need on more scientific information and co-operation with these respective fields of interest.

Die Sportgeneeskunde Vereniging beweer hom ook vir die bevordering van gesondheid deur die aanleer van gesonde lewensgewoontes, en wil hom graag amptelik skaar by die instansies soos byvoorbeeld die SA Mediese Navorsingsraad, die Nasionale Kankervereniging en die Nasionale Raad vir Rook en Gesondheid in Suid-Afrika, asook die Hartstigting deur die publiek bewus te maak van die gesondheidsgevaare wat die rookgewoonte inhou. Sportlui is nie altyd bewus van die onmiddellike nadelige effekte wat die rook van sigarette het op



hulle sportprestasies nie. Soveel as 16% van die totale hemoglobien van 'n strawwe roker kan verbind wees met koolstofmonoksied van sigareet-rook, en is dus nie beskikbaar vir die transport van suurstof nie. Die affiniteit van hemoglobien vir koolstofmonoksied is ± 250 meer as die vir suurstof en die karboksiehemoglobienvlakke keer eers 48 uur na die staak van rook terug na die van nie-rokers. Die chroniese hipoksemie van die roker, veroorsaak 'n polisitemiese respons wat beteken dat rook 'n stimulus is tot eri-tropoiese.

'n Verdere kompliserende faktor vir die sportman is dat koolstofmonoksied die suurstofdissosiasiekurve na links verskuif wat veroorsaak dat minder suurstof beskikbaar is vir die perifere weefsels as gevolg van die groter affiniteit van die heem vir suurstofbinding. Al bogenoemde faktore het 'n nadelige effek op aerobiese metabolisme en sal sportprestasies dienoreenkomstig nadelig beïnvloed.¹

Suid-Afrika benodig 'n omvattende anti-rook program wat sal voorkom dat jong mense begin rook, die regte van nierokers sal beskerm en rokers wat graag wil ophou, sal bystaan.²

In die lig van die feit dat rook die fisieke werkvermoë van sportlui negatief beïnvloed, asook die gesondheidsbenadeling wat passiewe rook vir alle persone inhou, het dit miskien tyd geword dat rook by alle sportbyeenkomste, by name binnenshuise byeenkomste by wyse van wetgewing verbied word. Die Wêreld Gesondheidsorganisasie het 7 April 1988 as die Wêreld Rook Verbode dag verklaar — dit is 'n gulde geleentheid vir die Suid-Afrikaanse Sportgeneeskunde Vereniging om hom te skaar by die pogings van die internasionale gesondheidsorganisasie om die gesondheid en lewenskwaliteite van al die lede van ons bevolking te verbeter!

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SPORT PSYCHOLOGY CONGRESS

R

REPORT ON THE PARTICIPATION IN THE IVTH INTERNATIONAL CONGRESS OF SPORT PSYCHOLOGY

The IVth International Congress of Sport Psychology, organised by the Association pour la Recherche en Psychologie du Sport, took place at the Université Libre de Bruxelles, 3-6 November 1987. Approximately 100 delegates representing 29



held, and 2 round table evening discussions convened.

The round table evening discussions convened by two of the most outstanding American sport psychologists, Prof. B.C. Ogilvie and Prof. R. Niedefffer, provided the highlights of the congress.

Delegates made good use of the rare opportunity to



should not delude themselves about financial gain. The provision of sport psychological services can only be seen as an additional avenue of professional practice, not the main or only area of practice.

The paper presented by the delegate from South Africa, Dr. Helgo Schomer, UCT Dept. of Psychology, entitled "Cognitive strategies and the perception of

training effort of marathon runners" was very well received, generating lively debate with the strong recommendation that the research into cognitive strategies through on-the-spot recording be extended to other endurance sports so that more possible cognitive training programmes be generated.

There were no signs of any nature that the presence and participation of a delegate from South Africa presented any political (or otherwise) concern.

The financial assistance granted by the HSRC for the participation in the congress is gratefully acknowledged.

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countries attended the four day programme. It was the aim of the congress to provide

draw on the rich experience and deep insight of the two presenters. It became apparent how young a field of research and application sport psychology still is and the immense scope for future development. The most important points emerging from the discussions were:

(1) The psychological health and well-being of the athlete or sport participant is of prime concern to the sport psychologist. This concern might well place the psychologist at odds with those of sport promoters and management.

(2) Athletes and sport participants do not approach psychologists to seek "therapy". Athletes and sport participants are interested in psychologists providing them with specific skills, like relaxation techniques to cope with competition stress and/or cognitive structures to maintain high motivation levels.

(3) Psychologists operating in the sporting arena

researchers with a forum to present their latest research findings and stimulate discussion on future developments and trends in sport psychological research and practice. The congress focused on three main areas of concern to sport psychologists:

(1) stress and anxiety; (2) psychological aspects of success and failure; and (3) motor learning, perception and decision making in the sporting arena.



All in all 40 papers were read, 40 poster sessions



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INJURY REHABILITATION WITH MACHINES

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Considerable reliance is placed on machine-based rehabilitation by physiotherapists or their colleagues in gymnasia. A physiotherapy practice is often regarded as complete only if the latest computer-controlled isokinetic device is available. A gymnasium is viewed as primitive unless it contains complicated, chrome-plated, variable resistance machines or multi-purpose stations. Clients are impressed, business flourishes and there seems little need to criticize the system. The question of scientifically evaluating these devices, however, still remains.

To answer this question, it is necessary to remember that the aim of musculoskeletal rehabilitation in particular is restoration of full structural and functional stability and mobility to the patient. In sports medicine this entails preparing the athlete to regain the strength, endurance, flexibility, speed and agility qualities specific to the sport he or she plays. In this respect, machines are often presumed to be safer and more effective than any other conditioning modalities, despite the fact that no well-controlled studies have yet shown isokinetic or other machines to be significantly superior to the traditional physiotherapy methods using PNF (proprioceptive neuromuscular facilitation) or Westminster pulleys.

WHY MACHINES?

Machines were developed to cater for the lucrative USA bodybuilding market, with their application in physiotherapy following later. One machine, the isokinetic 'Cybex' emerged both as a strength or torque testing device and as a rehabilitation machine. All machines have been compared with free weights by their manufacturers and pronounced to be safer, more space and time efficient, and more effective in enhancing strength. Some machines, such as Cybex, Nautilus

and Universal were designed to vary the resistance throughout the range of movement, since the force which can be exerted by any muscle group varies with joint angle and mechanical leverages. This feature was claimed to make variable or accommodating resistance machines superior to free weights, since "the resistance offered by weights remains constant throughout the range of any movement".

weight, thereby automatically producing accommodating resistance. This type of accommodation is physiologically more desirable than the predetermined variations imposed by Nautilus and Universal in particular, as it is mediated via the neuromuscular apparatus of the individual. Isokinetic devices such as Cybex, Kincom and MiniGym are also superior in this regard, since their resistance is similarly determined by the response of the trainee.



ISOKINETIC MACHINES

Isokinetic machines, though they appear to be state of the art to physiotherapists, also suffer from major limitations. Firstly, isokinetic contraction rarely, if ever, is a natural mode of operation for human muscles and extrapolation of isokinetic tests to concentric and eccentric contraction is of dubious validity. Probably more serious is the fact that there is a time lag between initiation of movement and resistance produced by the machine. Furthermore, termination of each movement on an isokinetic machine does not simulate the same neuromuscular reflex patterns which occur in free movement or movement against weights or pulleys.

Isokinetic machines also display major mechanical deficiencies. Analysis by the author and other workers reveals that the Cybex, for instance, is at no speed entirely isokinetic, a defect which becomes particularly serious at higher speeds. The proprioceptive control events elicited under these conditions differ dramatically from those occurring in free movement, so it is advisable that isokinetic training form a very limited part of the rehabilitation process.

In addition, most isokinetic machines do not offer three-dimensional motion or sequential concentric-eccentric muscle contraction. Finally, none of them yet is able to operate at the very high speeds associated with the impulsive changes in direction produced in most sports. In other words, isokinetic machines may

MACHINES AND PHYSICS

According to Newton's Second Law of Motion, constancy of force or resistance is impossible for any load which is accelerated from rest and decelerated back to rest again. Moreover, force plate analysis by the author has shown that the trainee regularly and quite unconsciously alters the acceleration of a free

play a role in rehabilitating contractile muscle tissue, but are seriously limited in conditioning soft tissues which store and release elastic energy. Isokinetic machines were innovative over 15 years ago; the Kincom and similar machines have removed some limitations, but those contemplating the purchase of isokinetic machines should wait for the cheaper, more advanced machines which modern computer technology will no doubt produce in the near future.

MACHINES IN GENERAL

It has already been shown that accommodating or variable resistance occurs whether one uses free weights, pulleys or special machines claimed to offer this exclusive feature. One advantage is provided by free weights and pulleys, namely that each trainee can vary the resistance according to his specific needs. The cams or levers of machines are built to suit the average person (whatever that might be) and cannot be altered for the individual.

The major advantages and disadvantages of machines lie in the fact that machines isolate a limited number of muscle groups in a specific plane of operation. If conditioning of a particular injured muscle is desired in one direction, then machines can be useful. However, voluntary muscle action involves concentric, eccentric and isometric contraction allied with proprioceptive control over several degrees of three-dimensional freedom, conditions which no machines can even vaguely provide. In particular, machines impose little demand on the balance and coordination mechanisms necessary for all sports movements, so that machine rehabilitation should furnish only a limited part of the spectrum of conditioning modalities. This means that adequate rehabilitation cannot be achieved by means of simple, monoplane flexion-extension on Cybex, Universal or Nautilus machines, for example. Return to full structural and functional stability and mobility necessitates flexion-extension, adduction-abduction and rotational conditioning; in other words application of the PNF principle that prescribes spiral/diagonal patterns augmented by recruitment of the necessary stretch reflexes. PNF, free weights and pulley systems can achieve this, but no machines can, despite the great cost of the latter.

MACHINES AND SAFETY

It is often presumed that machines are safer than free weights, despite the fact



that no definitive study has yet proved this claim. Certainly, machines can be safer for a person whose balancing or proprioceptive capabilities are seriously impaired, but the physiotherapist would hardly prescribe weights or even dynamic movements when isometrics or faradism might be the preferred primary treatment. Obviously, one must be familiar with the merits and deficiencies of all treatment modalities.

Some machines are potentially more harmful than the equivalent weights or pulley exercise. For instance, most bench-press, seated-press, 'pec-deck', seated leg-press and leg extension machines constrain one to commence movement near the weakest biomechanical position for the relevant joints. Moreover, these machines usually do not allow one to pre-stretch the muscles or provide a reserve of elastic energy in the collagenous tissue for the initial acceleration phase.

Force on structures of the lumbar spine is usually greater when using the seated press and back-extension machines as compared with the free-weights standing press and deadlift respectively. Machine leg-curls done prone on flat benches can hyperextend and damage the lumbar spine, while full-range machine leg-presses can cause hyperflexion injury to the same region.

Numerous machines pose similar hazards to the body, so it is essential for the physiotherapist, biokineticist or gym instructor to thoroughly understand the kinesiological patterns imposed by any machines which might be used for rehabilitation or normal training.

MACHINES AND EFFICIENCY

Machines can be very efficient in training isolated muscle groups, but highly inefficient in conditioning the body in terms of the number of machines required to offer adequate conditioning of even a single

joint. Despite the advertising claims of manufacturers, it requires a far greater variety of machines than free weights to achieve the same three-dimensional training effect on the soft tissues, neuromuscular systems and proprioceptive mechanisms of the body. Obviously, this is most beneficial to the manufacturer, and not the patient.

CONCLUSION

This article was not intended to offer a thorough analysis of the very extensive field of machine rehabilitation; instead its purpose was to acquaint the rehabilitation professional with

the scope and limitations of popular training devices in a field in which almost all the available information is produced by the manufacturers of machines. It needs to be appreciated that almost all machines are costly and in general inferior to free weights and pulley devices in offering broad spectrum conditioning of the musculoskeletal and neuromuscular systems.

If machine rehabilitation is desired, then the system of choice is still pulleys: they are cheap, durable, extremely versatile, safe and able to condition three-dimensionally using the well-proven principles of PNF. Pulley systems can also be converted into dynamic (isotonic) testing machines by the addition of strain gauges or accelerometers attached to a mini-computer, a method used successfully by the author. Other machines can be useful in isolating particular muscle groups and providing variety in training, but they should never be the sole means of rehabilitation or testing. The final criterion is not a computer printout, but a return of the athlete to fully functional, pain-free, long-term participation in his specific sport.

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SPINAL CORD INJURIES IN RUGBY PLAYERS

A.T. SCHER, MB, ChB, DMRD

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Routine radiological examination of the cervical spine — an aid in the prevention of serious spinal cord injuries in rugby players.

In 1983 I reported on a rugby player who had sustained cervical spinal cord injury in the absence of any fracture or dislocation, but consequent upon severe cervical disc degeneration, (Scher 1983). This, together with the observation that rugby players showed X-ray changes of severe degenerative disease of the cervical spine, suggested that players were prone to an earlier onset of degenerative disease. Confirmation of this supposition as investigated by X-raying the cervical spine of a number of asymptomatic club

players (Scher 1988). The results indicated that older rugby players, in particular those who play as tight forwards, are likely to have developed premature changes of degenerative disease, Fig. 1. The presence of these changes is of more than academic interest, as the risk of spinal cord injury is increased in the presence of degenerative disease. Under these circumstances, the spinal cord is vulnerable to damage after hyperextension injury to the head or neck, even in the absence of any fracture or dislocation (Scher 1983). The majority of these injuries occur in the presence of cervical spondylosis, (Scher 1976). The cord is pinched between the degenerate vertebral discs and osteophytes anteriorly and protruding redundant folds of ligamentum flavum posteriorly.

Apart from degenerative cervical spine

disease, other conditions of clinical importance may be evident. These include fusion of the vertebral bodies or evidence of a congenitally narrow spinal canal.

Fusion of the vertebral bodies either congenital or acquired, decreases the flexibility and normal range of movement of the cervical spine and predisposes towards trauma, Fig. 2. In an investigation into the relationship between cervical fusion and spinal cord injury, I showed that subjects with fused vertebrae were particularly prone to hyperextension spinal cord injury, even in the absence of radiological evidence of vertebral injury (Scher 1979). This investigation also showed that serious injury could result from minor traumas such as simple falls. Some individuals have congenitally narrow spinal canals, placing them at great



Fig. 1 Changes of disc degeneration at the C4/C5 and C5/C6 levels in the cervical spine of a 30 year old lock forward. Note the large posterior osteophytic spur (arrowed) projecting into the spinal canal.



Fig. 2 Flexion lateral view. Incidental finding of congenital fusion of the vertebral bodies and posterior elements of C5 and C6 in the cervical spine of an asymptomatic rugby player.

risk of spinal cord injury. If the sagittal diameter of the cervical canal at any level is 10mm or less, then any additional narrowing due to trauma or other processes, will almost certainly result in spinal cord damage. With diameters of 10 - 13mm, high risk is present. (Wolfe et al 1956).

In view of the above findings and potential dangers, the necessity for routine radiological examination of the cervical spine of all rugby players is evident. It would not be unreasonable to suggest that all rugby players, participating regularly in club or social rugby, undergo radiological examination of the cervical spine at least once during their playing career.

A limited radiological examination of the cervical spine need consist of only a single lateral view. This is technically a simple, rapid, inexpensive (only one X-ray film is needed) examination and does not expose the player to excessive irradiation.

Utilising the criteria previously discussed, the radiographs can be evaluated for the presence of the following changes:

- a) Presence of cervical vertebral fusions, either congenital or acquired.
- b) The presence of a congenitally narrow spinal canal.
- c) Any changes of degenerative disease.
- d) Evidence of previous vertebral fracture.

Awareness of the presence of these changes will enable a player, in consultation with his Medical Practitioner, to decide whether to continue his active rugby career. If significant changes are present, and particularly if his playing position is that of a tight forward, he will be well advised to either cease playing or to change his playing position to one where he is less exposed to cervical stress.

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THE STAR



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'N STAPTOG OP PAD NA GESONDHEID

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A

BSTRACT

The Cardiology unit of the Department of Internal Medicine of the Faculty of Medicine, University of Stellenbosch, under the leadership of Professor HFH Weich, in co-operation with the Department of Physiotherapy, Tygerberg Hospital, owe their successful cardiac rehabilitation programme to the fact that patients are effectively motivated and encouraged to become fit and to stay fit through regular walking. A successful rehabilitation programme culminates in a climb up Table Mountain. These hiking trips were introduced in 1982 as part of their rehabilitation programme. Sixty-five percent of the patients who participated in rehabilitation are still actively involved. The dropout rate is low in comparison with other studies undertaken both locally and overseas.



INLEIDING EN AGTERGROND

Dit is alom bekend dat 'n pasiënt na 'n hartaanval psigiese probleme ondervind, veral gedurende die eerste drie weke tuis wanneer hy gewoonlik begin om 'n nuwe beeld van homself as iemand met 'n hartletsel, op te bou. 'n Verskeidenheid van probleme mag ontstaan, onder andere: — swak menseverhoudings

- oorgodsdienstigheid
- toevlug neem tot drank
- oormatige oefening ("om myself te bewys")
- te bang om enige aktiwiteit te onderneem
- angs en depressie
- verlies aan libido, sterkte, energie en onafhanklikheid^{1,2,3}

Met die regte leiding verwerk pasiënte hierdie probleme makliker.

Gereelde oefening verhoog 'n mens seliggaaamlike sowel as geestelike welsyn. Wetenskaplikes wat die sielkundige uitwerking van 'n gereelde oefenprogram bestudeer het,^{4,5,6} het opgemerk dat namate mense fikser word, word hulle meer

- openhartig
- ontspanne
- na buite lewend
- selfonderhoudend
- verbeeldingryk
- vol selfvertroue
- stabiel

Navorsing het aan die lig gebring dat oefening doeltreffender as kalmeermiddels spanning verminder.^{3,6}

Dit is ook bekend dat oefening 'n persoon:

- emosioneel positief instel
- se angs, spanning en depressie verminder
- se slaap en ontspanning bevorder
- se energie laat toeneem
- se vitaliteit verhoog
- se konsentrasie, uithouvermoë, postuur, voorkoms, selfbeeld en sosiale aanpassing verbeter.

Oefening verhoog dus die kwaliteit van lewe.^{5,7,8}

Die regte leiding is van die uiterste belang vir volkome rehabilitasie. Die voordele van fisiese fiksheid word gebruik om psigiese fiksheid te verkry. 'n Omvattende oefenprogram, deur die Departemente Fisioterapie, Tygerberg Hospitaal en Interne Geneeskunde, (Kardiologie Eenheid) Fakulteit Geneeskunde, Universiteit van Stellenbosch, is ingestel. Die sukses van die rehabilitasieprogram is te danke aan 'n doelgerigte motiveringsaksie om pasiënte aan te moedig om fikse te word en daarna fikse te bly. Die program begin in die hospitaal, gaan oor in hoofsaaklik stapoefeninge tuis tot die pasiënt in-

skakel by 'n oefenprogram in die hospitaal waarna hy "uitpasseer" tot gereelde tuisoefeninge en bergklimuitstappies.

OMVANG VAN KARDIALE REHABILITASIEPROGRAMME

1. Primêre rehabilitasie (Intensiewe eenheid en saal)

Bedrus word vir die eerste drie dae na 'n hartaanval voorgeskryf, asook kalmeermiddels om te voorkom dat 'n moontlike spanningstoestand, 'n addisionele las op sy hart sal plaas. Die pasiënt word wel toegelaat om self te eet en aangemoedig om sy tone te beweeg en diep asemhalingsoefeninge te doen. Na ongeveer 'n verdere 3 dae mag die pasiënt, indien daar geen komplikasies is nie, begin uitsit in 'n gemakstoel. Eers vanaf dag 5 tot 6 mag die pasiënt begin stap. Daarna word die hoeveelheid oefening wat hy toegelaat word, daaglikks vermeerder. Na



ongeveer twee weke, wanneer die pasiënt ontslaan word, word van hom verwag om 200 meter te stap, asook een stel trappe te klim.

2. Sekondêre rehabilitasie (Oefenprogram tuis en in gimnasium in hospitaal)

Tuis word hy aangemoedig om daaglik te gaan stap. Hy begin met 200 meter en stap dan elke dag 50 meter verder,

sodat hy met die eerste opvolgbesoek een kilometer met gemak kan stap. Sodra die pasiënte een kilometer kan stap, word hy aangemoedig om elke dag een minuut langer te stap, totdat hy vir 30 minute aaneen kan stap. Binne 6 weke behoort hy 3 tot 4 kilometer per dag te stap. Ongeveer hierdie tyd word 'n inspannings-elektrokardiogram (EKG) uitgevoer. In Tygerberg Hospitaal word die oefeningstoets op 'n trapmeul volgens die Bruce-protokol gedoen.^{9,10,11}

Wanneer die pasiënt vir die oefenklasse gekeur word, moet die kardioloog, volgens die resultate van die inspannings-EKG, vir die pasiënt 'n veilige toelaatbare maksimum hartspoed bepaal. Tydens die oefeningsklasse word gepoog dat hierdie polspoed nie oorskry word nie.

Dié groep gekeurde pasiënte oefen drie keer per week, onder toesig, in die hospitaal. 'n Geneesheer met 'n volledige resussitasietrolle, 'n fisioterapeut, 'n reabilitasiesuster en 'n dieetkundige is altyd by die oefensessie teenwoordig. 'n Maatskaplike werker is ook onmiddellik beskikbaar om aandagaanige maatskaplike probleme te skenk.

Pasiënte met inferior infarkties word vier weke post infarkties na die oefeningklas gestuur, terwyl diegene met anterior en meer gekompliseerde infarktieses weke post infarkties na die klasse gaan. Die redes vir die vroeë insluiting is om die lang nie-aktiewe tydperk tuis te verkort, om die pasiënt in die oefenklas te kry vir morele ondersteuning voor hy terugkeer na sy werk en om kontak te maak met ander pa-

dien dit hoër is, moet die pasiënt eers rus. Namate die pasiënt fiks word, kan hy die rondte-oefening meermale in die voorgestelde tyd herhaal. Die oefeningssessie word afgesluit deur vyf minute op 'n statiese fiets te trap. Die tye wat vir die rondte-oefeninge toegelaat word, word in tabel I voorgestel:

mekaar nodig in 'n groepsverband om mekaar te motiveer en 'n groepsgees op te bou. Ondervinding het ook getoon dat die oorgrote meerderheid van die pasiënte, veral dié wat oormassas is, nie belangstel om te draf nie en dat stap vir hulle 'n beter aanvaarbare aktiwiteit is. Daarom is in 1982 besluit om maan-

TABEL I : ONTLEDING VAN RONDTE-OEFENINGE

Weke in oefenprogram	Tyd (minute)	Hoeveelheid rondtes
1	Geen beperking	1/2 rondte-oefening
2	Geen beperking	3/4 rondte-oefening
3	Geen beperking	Volle rondte-oefening en stap
4	Geen beperking	Volle rondte-oefening en draf
5	10	Een volle rondte
6-7	15	± 2 rondtes
8-9	20	± 3 rondtes
10-11	25	± 4 rondtes
12-13	30	± 5 rondtes

3. Tersiere reëhabilitasie (Langtermyn stapprogram)

Na voltooiing van die oefenkursus (3 tot 4 maande) word die pasiënt weer aan 'n inspannings-EKG onderwerp. Hulle vordering word nagegaan en 'n nuwe maksimum toelaatbare hartspoed word bepaal volgens standaard prosedure.

Die pasiënte kan dan voortgaan met die oefenprogram, maar hulle oefen sonder toesig. Hulle kontroleer hul eie hartspoed en is vir hulself verantwoordelik.

delikse staptogte te organiseer. Staptogte word aangenaam gemaak sodat die pasiënt dit as 'n maklike en aanvaarbare manier sien om saam met sy gesin tye in die vrye natuur deur te bring. Die pasiënt word dus aan iets blootgestel waarin hy werklik belangstel, wat hy saam met sy gesin kan geniet en wat meer aanvaarbaar is as ander vorms van strawwe fisieke aktiwiteite. Die staptogte dien as 'n ontvlugting in die vrye natuur om na die pasiënt as geheel om te sien, naamlik liggaam, siel en gees. Die resultate met hierdie benadering is indrukwekkend.

Die pasiënte word volgens die resultate van die tweede inspannings-EKG gekeur vir die staptogte.

Elke derde Saterdag van elke maand kom die pasiënte met familie en vriende bymekaar vir die uitstappie. Hulle stap tussen 12 tot 20 kilometer per dag. 'n Geneesheer en fisioterapeut vergesel die groep elke keer. Die staptog word afgesluit met 'n gesellige braai. Die uitstappies het met verloop van tyd uitgebrei van slegs 'n gewone staptog na moeilike klimroetes en selfs naweekuitstappies. Die pragtige bergwêreld van die Boland leen hom tot vele ander skouspelagtige daguitstappies wat goed benut word. Die uitstappies dien as 'n spesiale uitdaging vir die pasiënt om te kan bewys dat hul hul probleme volkome oorkom het.

TOTSTANDKOMING VAN DIE STAPTOGTE

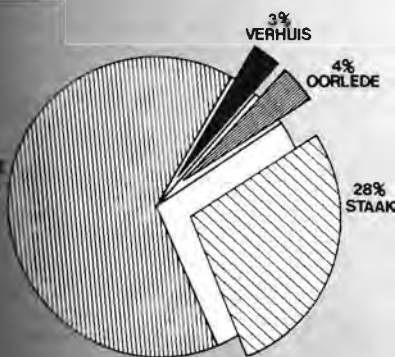
Ondervinding het getoon dat die pasiënt as individu die meeste van sy probleme byvoorbeeld kardiaale neurose, verwerk of oorkom het terwyl sy familie tuis nog probleme daarmee ondervind het. Dikwels word die pasiënt tuis soos 'n breekbare klein kosbaarheid behandel, terwyl hy eintlik fisies ten volle gerehabiliteer is. Pogings moes dus aangewend word om iets addisioneel by die oefeningsklasse te voeg om hierdie probleme te oorbrug. Voorligting deur middel van lesings een keer per maand en groepsbesprekings wat die wederhelf van 'n hartpasiënt kan bywoon, het heelwat gehelp, maar dit was nog steeds nie genoeg nie.

Die pasiënte wou ook graag verder as net die oefenklas vorder. Hulle wou uitdaginge hê sodat hulle aan hulself en die familie kon bewys dat hulle ten volle gerehabiliteer is en 'n normale lewe kon lei. Ondervinding het getoon dat die meeste van die pasiënte voor hulle hartaanval van nature nie geneig was om oefeninge op eie inisiatief te doen nie, en dat die oefenprogram van 3 tot 4 maande nie genoeg was om hul lewenswyse permanent te verander nie. Die pasiënte het

RESULTATE VAN OEFENPROGRAMME

Slegs een sterfgeval het in die oefenklas voorgekom sedert die reëhabilitasieprogram in 1974 begin is. Die oorledene kon ten spyte van aktiewe resussitasie nie bygebring word nie. Statistieke toon 'n styging van die aantal pasiënte wat sedert 1984 aan die staptogte deelneem: 1984 — 14 pasiënte

RESULTATE VAN 100 PASIËNTE WAT VANAF 1984 - 1987 VIR STAPTOGTE GOEDGEKEUR IS



siënte binne die groep.

Die oefenprogram bestaan uit vier opwarmingsoefeninge waarna die pasiënt vir 'n vasgestelde tyd 'n rondte-oefening doen, wat saamgestel is uit tien isotoniese oefeninge. Op vasgestelde kontrolepunte word die pasiënt se polstempo gekontroleer, sodat dit nie die maksimum toelaatbare hartspoed oorskry nie. In-



1985	—	25 pasiënte
1986	—	41 pasiënte
1987	—	65 pasiënte

Geen ongevalle of sterftes is nog tydens die staptoegte ondervind nie.

Die resultate van 100 opeenvolgende pasiënte wat vanaf 1984 tot 1987 vir die staptoegte goedgekeur is, word in figuur (1) aangetoon.

BESPREKING VAN OEFENPROGRAMME

Navorsing oor die hele Wêreld toon dat die primêre en sekondêre rehabilitasiefases goed is, maar die tersiêre rehabilitasie word verwaarloos.¹² Die stapprogram is besonder goed in die verband, want dit gee aandag aan daardie faset van rehabilitasie wat help om die pasiënt se lewenswyse permanent te verander.

Vyf-en-sestig persent van die pasiënte wat by die program ingeskakel word, hou daarmee vol en neem nog steeds aktief daaraan deel. In vergelyking met ander studies¹² is die uitvalsyfer van 35% baie laag. Die rede vir hierdie lae uitvalsyfer is, vergeleke met ander studies plaaslik en oorsee¹² waarskynlik te danke aan die feit dat stap in die natuur vir pasiënte met kardiële probleme nie vervelig is nie en dus meer aanvaarbaar is as ander strawwer fisieke aktiwiteite. Sodoende sorg dit vir beter pasiënt samewerking. Die redes vir diestaking van 28% van die pasiënte kan toegeskryf word aan werks- of vervoerprobleme, of dat die pasiënte voel hulle geen verdere rehabilitasie nodig het nie.

Van die 4% wat oorlede is, is 1% dood as gevolg van 'n motorongeluk, nog 1% dood as gevolg van komplikasies na 'n laparotomie vir 'n peptiese ulkus. Die res is oorlede as gevolg van komplikasies van hul hartletsel.

Pasiënte in die tersiêre rehabilitasiefase is geneig om te volharden verkies om permanent deel te wees van die groep om mekaar te motiveer tydens die staptoegte. Dit dien as 'n bron van inspirasie vir nuwe pasiënte wat toetree tot die rehabilitasieprogram.

Na die uitstappies voel die pasiënte spreekwoordelik "on top of the world". Die familie en vriende sien hul wederhelf/vader, moeder of vriend as iemand wat weer 'n gesonde normale lewe kan lei en dit bring hulle as familie en vriende baie nader aan mekaar, in baie gevalle baie nader as vòor die infarksie.

Dit is verblydend om te sien dat namate die pasiënte fikser word, hulle weer hul selfvertroue herwin. Na voltooiing van die kursus is hulle gewoonlik goed aangepas, vol selfvertroue en meestal beter af as voor hul hartaanval. Ons studies het ook die volgende bevestig:

- pasiënte is meer ontspanne
 - verbetering van werksituasie
 - verbreding van lewensuitkyk
 - eet en leef meer gesond
 - libido en slaappatroon verbeter
- Hulle is as't ware nuwe mense. Hulle hele leefwyse verander permanent, die kwaliteit van hul lewens word verbeter. Soos 'n pasiënt een keer tydens 'n groepsbespreking opgemerk het: "My hartaanval is die beste ding wat nog ooit met my kon gebeur het!"

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BIG BETTER 'BESTER'

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This gruelling competition comprised the following:

Compulsory events:
 Vasbyt 160km Cycle Race
 Hansa Duzi Canoe Marathon

Sunday Times/Leppin Iron Man
 Comrades Marathon

Optional Events

JSE. Marathon
 Midmar Mile Swim
 Argus Cycle Race

Two Ocean's Marathon

The ULTRAMAN COMPETITION has finally drawn to a close with a sigh of relief from many a competitor no doubt!

Praise must be mentioned to all those competitors successfully completing the Comrades Marathon. A special mention to one of our STARS — NICK BESTER for his magnificent display of guts and determination. To quote the majestic Fordyce: "I was at one stage worrying about Mark Page, but my seconds warned me rather to worry about Bester who was racing me all the way."

Bester's time for the Comrades was in incredible 5:39:00 which earned him a full 100 points and the ULTRAMAN TITLE. PRISCILLA CARLISLE was the first lady home narrowly missing her silver medal in a time of 7:30:39. Nevertheless, this performance by Priscilla secures her first place in the lady's competition.

The veteran's competition proved to be both interesting and extremely closely contested. A staggering 34 veterans — including a lady, Carol Honneysett, will be collecting medals. The main race throughout the competition was between two strong, committed and extremely talented athletes — Graeme Pope-Ellis and Geoff Matthews. These two trojans battled to the very end, only to see "The Pope" take the honours with a Comrades time of 6:36:30 and a total of 696,05 points giving him an incredible 3rd position overall.

Upsets were the Name of the Game, especially in this year's ULTRAMAN COMPETITION — and let a thought be spared for those courageous athletes

who attempted the Comrades but failed to finish the 89,9km route.

The Sponsors, Ciba Geigy, and the organisers Sports International would like to congratulate all those competitors who can deservedly call themselves "ULTRAMEN" (and LADIES!).

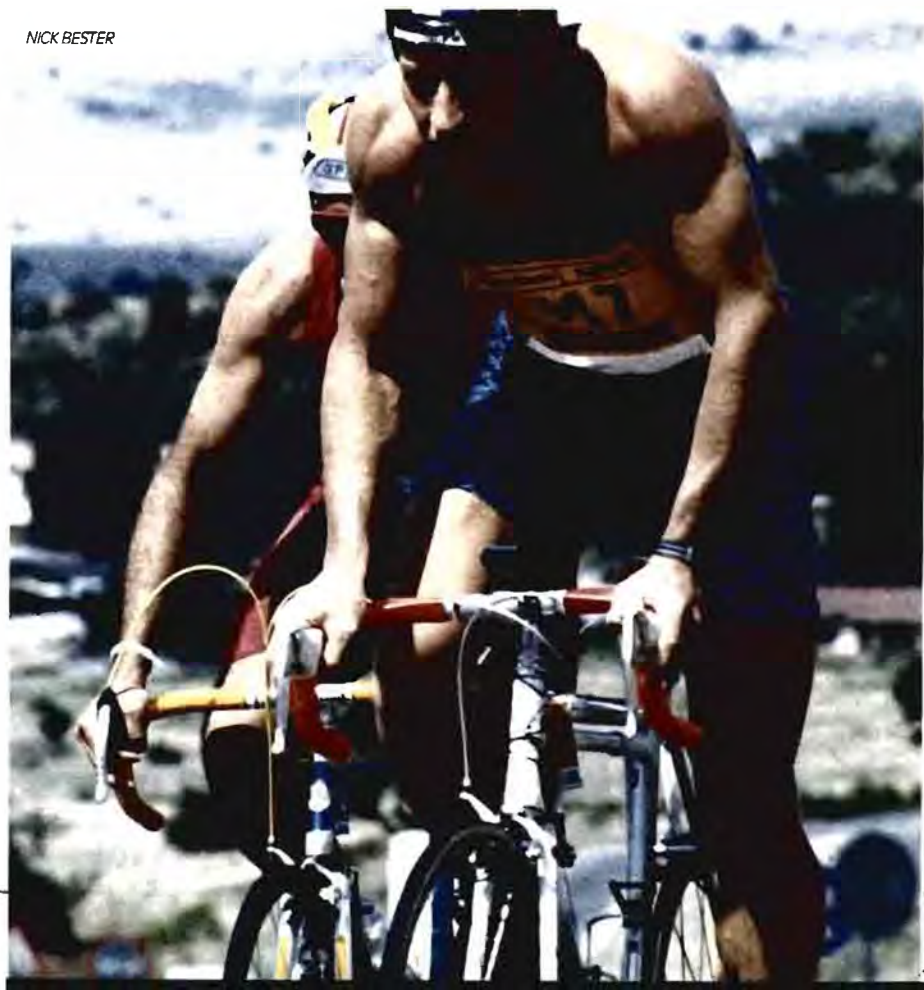
ULTRAMAN LADIES POSITIONS

1	Carlisle Priscilla	494.60
2	Meaker Jane	483.83
3	Bantock Sally	479.41
4	Bargate Karen	406.45
5	Laing Chantelle	390.31
6	Leonard Annemarie	377.29
7	Eardley Sandra/Margot	221.87
8	Honneysett Carol	Vet 122.27

OVERALL POSITIONS LISTING

NAME	Pos	JSE	Vasbyt	Duzi	Midmar	Ironman	Argus	2 Oceans	Comrades	Total
Bester Nicolaas	1	100.00	99.81	92.27	77.80	100.00	100.00	96.49	100.00	766.37
De Jager Pierre	2	84.72	99.45	76.61	61.52	98.74	97.39	100.00	81.50	699.93
Graeme Pope-Ellis	3	85.22	92.81	100.00	51.43	97.05	94.07	93.38	82.09	696.05
Fletcher Gordon	4	75.55	83.89	90.71	81.35	80.28	93.68	98.56	82.96	686.98
Janos George	5	92.02	96.71	87.41	67.15	93.47	98.07	80.21	67.48	682.52
Matthews Geoff	6	81.77	90.77	81.90	78.87	86.58	92.24	85.46	73.06	670.56
Moolman Martin	7	73.54	99.35	73.73	60.06	91.24	99.85	85.35	71.01	654.13
Van der Merwe Sam	8	74.55	88.78	80.84	100.00	72.87	93.43	75.30	57.95	643.72
Van der Merwe Martin	9	77.05	89.75	80.84	78.98	77.69	93.43	75.18	69.31	642.23
Lochner Lochi	10	80.82	96.51	58.48	32.22	90.46	94.61	83.98	76.71	613.79
Van Tonder Phillip	11	84.02	97.76	86.64	31.80	87.40	94.61	72.60	55.60	610.43
Britten Steve	12	61.28	88.74	57.49	86.22	71.77	92.52	72.16	72.10	602.28
Wilmot Michael	13	66.70	84.10	87.16	49.69	78.76	94.84	71.70	68.29	601.24
Jones Stan	14	76.14	84.16	49.50	86.22	82.05	89.42	74.46	56.62	598.57
Uys Roger	15	70.25	90.41	74.34	70.63	67.26	91.24	72.03	59.30	595.46
Williamson Norrie	16	81.14	89.30	43.61	77.38	78.46	86.58	89.87	43.56	589.90
Poolle Kenneth	17	81.71	71.37	51.74	58.25	72.34	90.98	89.26	69.56	585.21
Botha Max	18	75.06	66.50	73.58	56.30	69.45	84.53	79.10	72.79	577.31
Benson Ian	19	80.69	94.47	74.74	5.50	83.31	95.51	58.29	66.55	559.06
Cooper Colin	20	78.70	84.82	56.76	24.63	77.30	91.42	84.47	56.92	555.02

NICK BESTER



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INTERNATIONAL CONGRESS IN CAPE TOWN

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The South African Rugby Board in conjunction with the South African Sports Medicine Association is arranging an International Congress on Injuries in Rugby and

other Contact Sports.

This Congress will be held in Cape Town, at the Cape Sun on 21, 22 and 23 March 1989 and will form part of the South African Rugby Board's Centenary Celebrations.

A provisional programme has been drawn-up:

I TRAINING FITNESS

Basic principles

The Rugbyplayer's approach to fitness

Coaches assessment of fitness

Biokinetic approach to fitness

Fitness in Boxing

Fitness in Soccer

Fitness in the older participant

The psychologist's role in Sport

Diet and Food

Selection in build

Aerobics in training

II RISKS IN CONTACT GAMES

Statistical review of injuries

Injuries in Boxing

Injuries in Soccer

III INJURIES IN RUGBY

Risks in Rugby

Statistical Review International

Statistical Review SA School Rugby

Statistical Review Senior Rugby

Discussion

1. Rugby Football union

2. Scottish Rugby union

3. Irish Rugby football union

4. Welsh Rugby union

5. Australian Rugby football union

6. New Zealand Rugby football union

7. Federation Francaise de Rugby

IV SPORTS INJURIES AND THEIR TREATMENT

A. HEAD INJURIES

— Diagnosis of concussion

— Treatment and evaluation

B. NECK INJURIES

Serious spinal injuries in sport

Cervical spinal injuries —

diagnosis/X-rays

Transport of injured patients

Cervical spine in ex-players

C. FACIAL INJURIES

Pattern of Facial Injuries

Treatment of Mandibular and

Maxillar injuries

D. MOUTH — TEETH

Teeth injuries

The use of mouthguards in —

Boxing/Rugby

The making of a mouthguard

E. EYE AND EAR INJURIES

Injuries to Eyes

Ear Haematoma

F. INJURIES IN ABDOMEN, THORAX KIDNEYS AND GENITAL ORGANS

Thorax and Abdominal Injuries

Renal injuries

Injuries to Genital organs

G. SHOULDER GIRDLE INJURIES

Shoulder dislocations

Acromioclavicular injuries

H. UPPER LIMB INJURIES

Arm and Elbow

Injuries to wrist, hand and

fingers in contact sports

I. KNEE INJURIES

Anatomy of the knee

Evaluation of the knee

Injuries patterns

Diagnosis of knee injuries

The use of the arthroscope

Rehabilitation after knee injuries

J. ANKLE INJURIES

Diagnosis of ankle injuries

Treatment of Injuries

Rehabilitation of ankle injuries

K. MUSCLE, NERVE AND SOFT TISSUE INJURIES

Muscle injuries

Treatment of muscle injuries

Cramps in leg muscles

Dermatological problems in

Rugby

V INJURIES AT THE SITE OF THE INJURY

On the field

In the Boxing ring

Role of the Referee

Minimum 1st Aid requirements

Use of Local Anaesthetics

VI FIRST AID SERVICES

Organization at a major stadium

Duties of First aids

Training of Personnel

Accident services

VII PREVENTION OF INJURIES

Training and Fitness

Strapping and Taping

Pads and Braces

Rugby Boots and Studs

Protective aspects in Boxing

VIII TOURING SIDES

IX INSURANCE OF PLAYERS

X REHABILITATION

Role of Physiotherapy

Role of Biokinetics

Rehabilitation of serious injuries

In addition to this, time will be set aside for a South African Knee and Arthroscopic Society Symposium and sessions for free scientific papers.

For any preliminary enquiries please contact: Sally Elliott, Post Graduate Educational Centre, University of Cape Town. Tel: (021) 47-1250.

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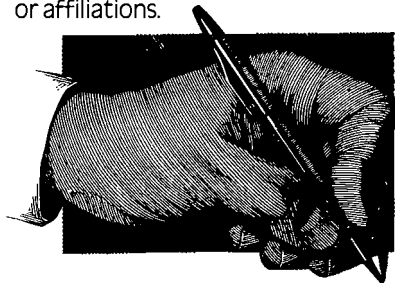
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1. Noakes TD. Heart disease in marathon runners: a review. *Med Sci Sports Exerc* 1987; 19: 198-194.

Book references should be set out as follows:

1. Peterson L, Renstrom P. Sports Injuries. Their prevention and treatment, 1st ed. South Africa: Juta and Co Ltd, 1986.
2. Oldridge NB: Compliance with exercise programs. In: Pollock ML, Schmidt DH, eds. Heart Disease and Rehabilitation (ed 2). New York, John Wiley & Sons, 1986: 629-646.

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The more practical articles, review articles, papers presented at congress etc, do not need to comply with such strict guidelines —

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References

As for scientific articles.

Dear Editor

I would like to reply to Clive Noble's editorial comment on alternative medicine in the 1987 Vol. 2 No. 4 issue in which he discussed the Zola Budd saga. I would like to answer some points raised by Clive Noble, with respect to the heel lift assessment described in the article.

Firstly, what was not made clear was that the practitioner treating Zola Budd was a chiropractor, and he used a technique called Applied Kinesiology, which is the use of manual muscle testing to evaluate body function through the dynamics of the musculoskeletal system. Applied Kinesiology is the fastest growing health system in the world today, and it is extremely accurate in assessing structural balance. When assessing whether a heel lift is required or not, the procedure is far from a hit and miss method. Secondly it must be understood that when there is a short leg on one side of the body, all the postural weight bearing muscles on that side will test weak. This is extremely easy to demonstrate. Once all potential problem areas are adjusted and corrected, for example, pelvis, spine, knees and feet, certain muscles will be tested on the side of the body where the short leg is suspected with the patient lying on his back. When all muscles test strong, the same muscles will be re-tested with the patient standing up. If the muscles become weak, there is indication that the balancing support of a lift is needed. The patient can be tested with lifts of varying heights under the suspected deficient sides, with the indicator muscles being re-tested for strengthening. When the optimum amount of lift for the patient is found, all the indicator muscles will instantly strengthen. Furthermore, it should be noted that two types of leg length imbalance may be present. One is an anatomical and the second is a physiological.

An anatomical short leg refers to a leg

that is actually anatomically short, whereas a physiological short leg is short due to a structural problem such as a pelvic rotation. The physiological short leg will respond to the normal chiropractic correction and there will be no necessity for a heel lift, except in very, very extreme cases where there is a severe pelvic problem. In these cases the application of a heel lift is normally only a temporary measure to allow the patient to recover from the acute phase of back pain. The usual muscle testing procedures would have been used to evaluate whether or not the lift was necessary. This would also answer Clive Noble's statement where he claims that a number of the cases treated by Ronald Holder have had scientifically accurate radiological leg length measurements that revealed equal leg lengths.

The case that responds better to the application of a heel lift is the anatomical short leg, which I can only assume must have been Zola Budd's problem. However, it must be noted that not necessarily are all anatomical short legs treated with heel lifts as very often the body is able to adapt and compensate for this deficit. Again in this case a leg length difference showing up on X-rays will not have the associated weakness of muscle testing. Indeed an application of a heel lift in this case would be detrimental.

It must also be pointed out that the use of heel lifts is not common in chiropractic and Applied Kinesiology. Probably 95% of all patients respond to the chiropractic adjustments and muscle balancing procedures and do not need a heel lift.

One further point is that we in the chiropractic profession feel most strongly that if rule 92 was done away with and the Medical and Chiropractic practitioners were allowed to work together, the patient would be the winner.

Yours sincerely

Dr Frans Kromhout.

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