Opinions expressed throughout this journal are the contributors own and do not necessarily reflect the views or policy of Sports Medicine Australia (SMA). Members and readers are advised that SMA cannot be held responsible for the accuracy of statements made in advertisements nor the quality of the goods or services advertised. All materials copyright. On acceptance of an article for publication, copyright passes to the publisher.

Publisher
Sports Medicine Australia
PO Box 237 Dickson ACT 2602
Tel: (02) 6230 4650
Fax: (02) 6230 5908
Email: smanat@sma.org.au
Web: www.sma.org.au
Circulation: 5900
ISSN No. 1032-5662
Editors
John Orchard
Kerry Mummery
Managing Editor
Dominic Nagle
Chief Executive Officer
Gary Moorhead
Subscription Manager
Joyce McClune
Advertising Manager
Dominic Feenan
Design/Typesetting
Levitate Graphic Design

SMA STATE BRANCHES
ACT
ACT Sports House
100 Maitland St, Hackett ACT 2602
Tel: (02) 6247 5115
New South Wales
PO Box 724, Glebe NSW 2037
Tel: (02) 9660 4333
Northern Territory
PO Box 2331, Darwin NT 0801
Tel: (08) 8981 5342
Queensland
Sports House, 150 Caxton St, Milton QLD 4064
Tel: (07) 3667 2700
South Australia
PO Box 219, Brooklyn Park SA 5025
Tel: (08) 8234 6367
Victoria and Tasmania
1st Floor, 128 Jolimont Rd, Jolimont VIC 3002
Tel: (03) 9654 7733
Western Australia
PO Box 57, Claremont WA 6010
Tel: (08) 9285 8033

SUBSCRIPTION RATES 2003
Australia A$35
Overseas A$50
SMA members receive Sport Health as part of their membership fee
Single copies and back copies A$15
(includes postage)
PP No. 226480/000028
For subscriptions contact Joyce McClune
Phone: 1300 6230 4650
Email: smanat@sma.org.au

Contents

DR J __________________________________________________ 2
Lots of optimism, but when will it start making a difference?

PHYSICAL ACTIVITY AND HEALTH: Forward on four fronts _____________ 4
Sport in the heat: SMA’s new guidelines
Women’s health 10 years on
Preparing for exercise: SMA’s pre-exercise screening system
Choose health! Be active! The proper way to exercise for older people

MURALI’S DOOSRA: Technology and the law in cricket ________________ 13
Bruce Elliott, Jacque Alderson, Siobhán Reid and David Lloyd

AFL INJURY REPORT: Season 2004 _____________________________ 16
John Orchard and Hugh Seward

ANKLE SPRAINS AND SPORTS PHYSIOTHERAPISTS _________________ 22

BULLETIN ______________________________________________ 23

Cover photograph: Australian Sports Commission
SMA can enter the summer season this year with a renewed sense of optimism about the potential for growth in the organisation, having seen the annual conference in Melbourne exceed expectations. Linking sports medicine to both injury prevention and physical activity from the conference viewpoint meant that more than 1000 people attended. More importantly, the presence of administrators from bodies such as the Department of Health and Ageing at the conference (probably due entirely to the physical activity stream) led to optimism that sports medicine might actually one day be accepted on the political landscape in Australia.

Rod Bahr certainly gave an excellent keynote address on the opening day, but was he just preaching to the converted? In the same manner, we all believe that, if sports medicine was better funded and resourced across the board, physical activity levels would rise (and therefore heart disease, diabetes and cancer levels would drop). Correct me if I’m wrong, but I cannot think of any MP (Rod Kemp or John Howard (or Kim Beazley) in the audience at Roald’s talk, and I don’t know that any of them would have been interested at all by any of the content).

We live in an age where physical activity and injury prevention should be enormous priorities for Australia and therefore organisations such as SMA, ACHPER, ACPG, SPCG, etc should be flush with money. That these organisations (and many of their members) are merely treading water financially is a symptom of the fact that lip service is paid to both physical activity and sports injury prevention, but there is no Federal Government resolve to make either of these areas work from the top.

If I was giving the Howard Government a mark out of 10 in these areas, it would be zero out of 10 for sports injury prevention and it would be minus 4 or minus 5 out of 10 for physical activity. With respect to sports injury prevention, the Federal Government literally does absolutely nothing and, with respect to physical activity, it has policies which actually discourage physical activity and it has not been motivated to change these policies despite watching activity levels go backwards in the last decade.

As a sports physician, I have most vested interest in how my own society the ACSP is doing, and at the moment there is much collective backslapping at how the ACSP is about to have its application for specialty recognition assessed for the first time. Included in the application is a letter from the relevant assessment body in 1994 saying that the assessment of sports medicine should proceed in the “near future”. Depending on your time scale, 2005 may seem like the near future from 1994, but in some aspects it is quite a long time. For example, over this period the percentage of women in Australia over 50 who are considered obese has risen from 5% to 13%, according to the Australian Longitudinal Study on Women’s Health.

Specialty recognition for sports medicine may seem to those on the outside like an indulgence, but all I would do is if it actually ever occurred is being sports medicine into line with every other recognised area of medicine in Australia. Sports medicine is the only area of medicine in this country that is officially recognised as a “specialty”.

The lies have followed the theme of the year in order and make sure your practice standards and training program are high quality, then you will soon get assessed by the relevant body and specialty recognition will proceed.”

This is actually the complete opposite of the truth. The Government has acknowledged that many sport standards are high and our training program is adequate by giving our new Fellows and registrars provider numbers (numbers that they aren’t even meant to have. It has refused to do a formal assessment (which perhaps may be finally done over the next 2 years by the AMC) and it would be harder to resist the call to bring sports physicians under Medicare to line with other areas of medicine.

That it doesn’t support sports physicians to have equal rebates to other branches of medicine can only be due to a philosophical belief that sport medicine should be moneyed by the Government only given provider numbers (ie, licences to practice under Medicare) by courtesy of the Government breaking its own legislation. Section 19AA of the Health Insurance Act forbids Medicare rebates being paid to “a patient in respect of a service rendered by a medical practitioner, where the practitioner completed their internship on or after 1 November 1996, unless the practitioner is recognised as a specialist, consultant physician or general practitioner”.

Sports physician registrars and new Fellows who completed their internships after 1/1/96 are neither specialists, consultant physicians nor GPs, so strictly speaking they should not be allowed to participate in Medicare.

Somehow this Government is breaking its own rules for the time being, so the need to gain specialty recognition for sports medicine is pretty acute when some of our registrars and even Fellows are literally practising using provider numbers which they are strictly not entitled to have.

Inactivity levels were in the room at Roald Bahr’s presentation, they would be secretly thinking “…you mean that physical inactivity and obesity levels are much higher in lower socioeconomic areas of the country (which traditionally vote for Labor)… and what exactly is the problem?”

This government wants sports physicians to be able to stay in practice, so that our top athletes are cared for well and wealthy members of society can also access good sports medicine treatment by paying high out-of-pocket fees. However, it wants to keep the government contribution towards sports medicine to a bare minimum as it believes that sports medicine is a luxury for the well-to-do rather than an important service for society (a bit like plastic surgery, perhaps).

This is why the ACSP had followed any strategy other than having a high quality standard of practice and training program. In the United Kingdom, when those who wish to participate would be getting partially funded by those ‘members’ who were inactive and who only joined because they were forced to. This would be a tax on inactivity, which is what Australia desperately needs.

The universities, with compulsory sports union membership, have this tax on inactivity in place and Brendan Nelson proposes to make it illegal. He released this policy and cried “Why should a single mother of two studying nursing be forced to pay for sporting facilities that she doesn’t use?” As I said, if we actually had a real minister for sport and for health we could have the correct template, and the Government, there are no votes in physical activity policies. John Howard’s Government is behaving as if it had no votes on their taxes, watching the Prime Minister hand out the medals at sporting events, rather than actually participating in sport.

We stayed quiet at the Olympics, but we should be prepared to protest next March at the Commonwealth Games if the following is still the case:

1) the Federal Government still has an official policy that it wants to lower membership at all sports unions around Australia;
2) sport is still the only major “injury” area that is not prioritised for research funding by the Federal Government.
3) there is still no plan for an Australian national sports injury surveillance system (which New Zealand has shown is completely achievable and not excessively costly).

Continued on page 23
Sport in the Heat

SMA’s guidelines for sporting clubs and associations and the physically active

Physical activity levels in the general Australian community are low and falling. The urgency of the question how we deal with this is great and growing. In the last few weeks, there have been launches of four significant developments which can – if followed through – exert strong influence on how we deal with a major community health issue:

• SMA’s new guidelines for sport and exercise in the heat
• Australian Government guidelines on exercise for older people
• The report on the first 10 years of the Australian Longitudinal Study on Women’s Health.
• SMA’s new pre-exercise screening system

Every year in hot weather Sports Medicine Australia receives requests from sporting clubs and associations, individuals and members of the media asking whether or not their sporting events or training should be modified, curtailed or cancelled in hot weather and when it is safe to play sport or be physically active in the heat?

To help organisations, coaches, teachers and other individuals when conducting sport in hot weather, SMA has produced this revised set of guidelines. These new guidelines are based on the latest research as well as the expertise of SMA’s medical and scientific members.

Most people understand the importance of physical activity for good health but it is just as important that, when levels of activity rise, the risk of harm is minimised. And it is even more important for those who have not recently or regularly taken part in sport or physical activity.

These guidelines are not binding, but SMA reminds all parties that they must act responsibly. We encourage a common sense approach and consideration of the comfort and well-being of all individuals including participants and officials.

Modification or cancellation of events, training or withdrawal from participation may be appropriate even in circumstances falling outside these recommendations.

There are many factors to be considered when clubs and associations are contemplating modifying, postponing or cancelling sporting events or training.

Sporting organisations need to be aware of the difficulty of setting ‘one size fits all’ guidelines in this area. For normally healthy active people, the only dangers from heat illness are likely to arise from high intensity exercise such as endurance running. Most community sport does not reach this level for periods long enough to cause serious harm. Many types of sport, such as cricket and tennis, are usually safe at higher temperatures because of the lower intensity of the play.

One area of higher risk for organisers of community-level sport is in the conduct of marathons and fun runs and bike rides. These events are more likely to see participants push themselves beyond their normal boundaries of activity, and organisers need to take extra precautions.

If, at any time, high intensity exercise in a hot environment, with the associated elevation of body temperature, can lead to heat illness. Heat illness in sport presents as heat exhaustion or the more severe heat stroke.

Heat exhaustion

Heat exhaustion is characterised by a high heart rate, dizziness, headache, loss of endurance/skill/confusion and nausea. The skin may still be cool/sweating, but there will be signs of developing vasoconstriction (eg, pale colour). The rectal temperature may be up to 40°C and the athlete may collapse on stopping activity. Inherent temperature should only be measured by a doctor or nurse.

To avoid heat exhaustion, if people feel unwell during exercise they should immediately cease activity and rest. Further benefit comes if the rest is in a shaded area with some passing breeze (from a fan if necessary) and the person takes extra hydration. Misting or spraying with water can also help.

Heat stroke

The characteristics of heat stroke are similar to heat exhaustion but with a dry skin, confusion and collapse. Heat stroke may happen with an athlete who has not been identified as suffering from heat exhaustion and has persisted in further activity. Core temperature measured in the rectum is the only reliable diagnosis of a collapsed athlete to determine heat stroke. This is a potentially fatal condition and must be treated immediately. It should be assumed that any collapsed athlete is in danger of heat stroke. The best first aid measures are Strip/Soak/Fan:

• Strip of excess clothing
• Soak with water
• Fan
• (Ice placed in groin and armpits is also helpful.)

The aim is to reduce body temperature as quickly as possible. The athlete should be referred immediately for treatment by a medical professional.

Important: heat exhaustion and heat stroke can still occur even in the case of good hydration.

Environmental Factors

1. Temperature

Ambient temperature is the most easily understood guide available, and is most useful on hot, dry days

<table>
<thead>
<tr>
<th>AMBIENT TEMPERATURE</th>
<th>RELATIVE HUMIDITY</th>
<th>RISK OF THERMAL INJURY</th>
<th>POSSIBLE MODIFYING ACTION FOR VIGOROUS SUSTAINED ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 20</td>
<td>&lt; 20%</td>
<td>Low</td>
<td>Heat illness can occur in distance running. Caution over-motivation.</td>
</tr>
<tr>
<td>21 - 25</td>
<td>&lt; 40%</td>
<td>Low - moderate</td>
<td>Increase vigilance. Caution over-motivation.</td>
</tr>
<tr>
<td>26 - 30</td>
<td>&lt; 50%</td>
<td>Moderate</td>
<td>Moderate early pre-season training intensity. Reduce intensity and duration of play/training. Take more breaks.</td>
</tr>
<tr>
<td>31 - 35</td>
<td>&lt; 30%</td>
<td>High - very high</td>
<td>Limit intensity. Limit duration to less than 60 minutes per session.</td>
</tr>
<tr>
<td>36 and above</td>
<td>&gt; 25%</td>
<td>Extreme</td>
<td>Consider postponement to a cooler part of the day or cancellation.</td>
</tr>
</tbody>
</table>

OR

WGBT

Further information might be gained from what is known as the Wet Bulb Globe Temperature (WGBT), which is suitable for hot, humid days

<table>
<thead>
<tr>
<th>WGBT</th>
<th>RISK OF THERMAL INJURY</th>
<th>POSSIBLE MODIFYING ACTION FOR VIGOROUS SUSTAINED ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td></td>
<td>Heat illness can occur in distance running. Caution over-motivation.</td>
</tr>
<tr>
<td>21 - 25</td>
<td>Moderate to high</td>
<td>Increase vigilance. Caution over-motivation.</td>
</tr>
<tr>
<td>26 - 29</td>
<td>High - Very high</td>
<td>Limit intensity. Limit duration to less than 60 minutes per session.</td>
</tr>
<tr>
<td>30 and above</td>
<td>Extreme</td>
<td>Consider postponement to a cooler part of the day or cancellation (allow swimming).</td>
</tr>
</tbody>
</table>

The Bureau of Meteorology (BOM) produces ambient and WGBT readings for many locations in Australia. You can check these readings and a guide for the relative risk for your location at www.bom.gov.au/products/ISNS5004.shtm or by clicking the ‘Local Hot Weather alerts’ button at www.sma.org.au
Dehydration

Dehydration is fluid loss which occurs during exercise; mainly due to perspiration and respiration. It makes an athlete more susceptible to fatigue and muscle cramps. Inadequate fluid replacement before, during and after exercise will lead to excessive dehydration and may lead to heat exhaustion or heat stroke.

To avoid dehydration, SMA recommends that:
- athletes drink approximately 500 ml (2 glasses) in the 2 hours before exercise;
- during exercise longer than 60 minutes, 2-3 cups of cool water or sports drinks (500-700 ml) are sufficient for most sports;
- after exercise, athletes replenish their fluid deficit to ensure that they are fully re-hydrated, but not over-hydrated.
- refer to SMA’s free DRINK UP brochure available as a web download at http://www.sma.org.au/downloads/ or from your local National Pharmacies store.

Points to consider.
Will your players and officials be able to consume enough fluid during the event?

Even a small degree of dehydration will cause a decrease in performance.

Take care not to over-hydrate.

Drinking too much fluid can lead to a dangerous condition known as hypotraemia (low blood sodium).

Aim to drink enough to replace losses but not more than that.

Factors to consider before cancelling or modifying a sporting event or training

(‘Remember not only to take players into account but also umpires, officials and volunteers’)

N.B. It is important to watch for unusual “heatwave” conditions or variations from the average temperature for the time of year. This is one situation where there may be a greater danger of heat illness.

2. Duration and intensity of an event
- The combination of extreme environmental conditions and sustained vigorous exercise is particularly hazardous for the athlete. The greater the intensity of the exercise, the greater the risk of heat related symptoms; eg. distance running is more of a problem than stop-start team events.
- Player and official rotation may also be considered.
- Reducing playing time and extending rest periods with opportunities to rehydrate during the event would help safeguard the health of participants.
- Provision of extra water for wetting face, clothes and hair is also important.
- A fan to enhance air movement will be beneficial.

3. Conduct of competition and training (hydration and interchange opportunities)
- Associations may consider dividing games into shorter playing periods rather than halves to allow for extra breaks.
- Coaches may consider alternative training times and venues during hot weather.
- Remember, even five minutes rest can cause a significant reduction in core temperatures.
- It is important to consider the welfare of officials, as well as players.

4. Time of Day
- Avoid the hottest part of the day (usually 11 am-3 pm). Scheduling events outside this time should be a consideration throughout any summer competition, training or event, regardless of the temperature.
- Local Environment
- Radiant heat from surfaces such as black asphault or concrete can exacerbate hot conditions.
- The type of exercise surface and the amount of sunlight vary significantly with different sporting activities and therefore must be considered for each individual sport.
- An air-conditioned indoor venue will provide less of a problem. A hot indoor venue or an outside venue without shade cannot be considered an acceptable environment.
- Airflow should be considered, including fans in change rooms or appropriately placed.

Remember, air movement decreases heat stress. However, a following wind can increase problems for runners or cyclists.

Host (personal) factors

1. Clothing
- Type of clothing is vital in minimising heat risks associated with exercise in heat.
- Fabrics that minimise heat storage and enhance sweat evaporation should be selected.
- Light weight, light coloured, loose fitting clothes, made of natural fibres or composite fabrics with high wicking (absorption) properties, that provide for adequate ventilation are recommended as the most appropriate clothing in the heat.

This clothing should complement the existing practices in Australia that protect the skin against permanent damage from the sun.

This should apply to the clothing worn by players, umpires, other officials and volunteers.

Protective clothing
If clothing is worn for protective reasons, ensure that it is worn only while training and competing in hot weather.

Some examples include:

- leathers in motorcycling and mountain biking;
- protective equipment for hockey goalkeepers and softball and baseball umpires.
- Remove non-breathable clothing as soon as possible if the participants or officials are feeling unwell in hot conditions.

Start cooling the body immediately via ventilation and or a cool spray such as a soaker hose or a hand-held spray and a fan.

2. Acclimatisation of the participant
- Acclimatisation of the participant includes umpires, other officials and volunteers as well as players.
- Preparation for exercise under hot conditions should include a period of acclimatisation to those conditions, especially if the athlete is travelling from a cool/humid climate to compete in hot/humid conditions.
- It has been reported that children will acclimatise slower than adults.
- Regular exercise in hot conditions will facilitate adaptation to help prevent performance deterioration, or the athlete suffering from heat illness, during later competitions.

3. Fitness levels/athletic ability of participant
- A number of physical/physiological characteristics of the athlete will influence the capacity to tolerate exercise in the heat, including body size and endurance fitness.
- In endurance events, accomplished but non-elite runners, striving to exceed their performance, may suffer from heat stress.

The potential for heat-related illnesses would be exacerbated if they have not acclimatised to the conditions and have failed to hydrate correctly.

- Overweight and unconditioned athletes, umpires, officials and volunteers will generally also be susceptible to heat stress.
- Refer to SMA’s free DRINK UP brochure available from SMA.org.au/education or your local National Pharmacies store.

4. Age and gender of participant
- Female participants may suffer more during exercise in the heat because of their greater percentage of body fat.
- Young children are especially at risk in the heat. Prior to puberty, the sweating mechanism, essential for effective cooling, is poorly developed. The ratio between weight and surface area in the child is also such that the body absorbs heat rapidly in hot conditions.

In practical terms, child athletes must be protected from over-exertion in hot climates, especially with intense or endurance exercise.

Although children can acclimatise to exercise in heat, they take longer to do so than adults.

- Coaches should be aware of this and limit training for non-acclimatised children during exposure to hot environments.

NB: Children tend to have a more “common sense” approach to heat illness than adults. They ‘listen to their bodies’ more and will usually slow down or stop playing if they feel distressed in the heat.

On no account should children be forced to continue sport or exercise if they appear distressed or complain about feeling unwell.

Veteran participants may also cope less well with exercise in the heat.

Reduced cardiac function is thought to be responsible for this effect.

5. Predisposed medical conditions
- It is important to know if athletes, umpires, official or volunteers have a medical condition and are taking medication that may predispose them to heat illness.
- Examples of illnesses that will put the participant or official at a high risk of heat illness include asthma, diabetes, pregnancy, heart conditions and epilepsy. Some medications and conditions may need special allowances.
- Preventative measures can be undertaken to minimise heat illness. Examples include the provision of shade, hats, appropriate sunscreen, sports bottles and drinking water.

It is important to have trained personnel available to manage heat injuries and designated recovery areas for patients.

In situations where heat problems may be expected, an experienced medical practitioner should be present.

Heat stroke is potentially life threatening. Any indication of this condition should be immediately referred for medical assessment.

- Participants and officials who present with an illness such as a virus, flu or gastro or who are feeling unwell are at an extreme risk of heat illness if exercising in moderate to hot weather.
- Participants or officials who may be affected by drugs or alcohol may be at an extreme risk of heat illness if exercising in moderate to hot weather.
- SMA has produced Pre-exercise Health Check Guidelines. These should be used if pre-existing medical conditions are suspected or if the participant has no recent record of activity. The Guidelines can be downloaded from www.sma.org.au.

6. Other factors to consider
- It is important to have trained personnel available to manage heat injuries and designated recovery areas for patients.

Heat stroke is potentially life threatening. Any indication of this condition should be immediately referred for medical assessment.
Women’s Health

10 years on

The Australian Longitudinal Study on Women’s Health has issued a series of reports on women’s health, including weight gain, ageing, use of rural health services and the use of tobacco and alcohol.

The reports have been compiled at the halfway stage of the 20-year study, which is examining the health of more than 40,000 women over three generations all over Australia.

The study is being conducted by a team of researchers from the University of Newcastle and The University of Queensland and is funded by the Australian Department of Health and Ageing.

The women taking part were selected in three age cohorts – 18-25, 45-60 and 70-75 – and they will remain throughout the study. Each group is comprehensively surveyed every three years so that comparisons can be made over time and between age groups. Three surveys have been conducted and analysed and a fourth is in progress.

They take a comprehensive view of health throughout life, including physical and emotional health, access to health services, health behaviour, sociodemographic factors such as employment and education, and key life events such as childbirth and widowhood.

The study began in 1996, thanks to Carmen Lawrence, the then Minister for Health. The current Minister, Tony Abbott, acknowledged this on 14 September when he launched the study, also announcing that the government would provide another $4.62 million over the next three years so that the study can continue.

Sport Health reports on some significant areas in the reports.

Weight

In 1996, the younger women had the lowest average weight (62.6 kg) and the mid-age women the heaviest (68.6 kg), a difference of 6 kg. By Survey 3, the younger women had gained more weight than the mid-age women. Average weight was 67.4 kg for the younger group and 71.0 kg for the mid-age group, a difference of 5.6 kg.

The pattern of weight change was different in the older cohort: their average weight decreased during the first six years of the study.

In all three age cohorts, the average weight of women in rural and remote areas was higher than that of urban women. Young rural women also gained weight faster than any other group.

In 1996, average body mass index of the younger women was 22.7 compared with 25.7 for the mid-age women and 25.5 for the older cohort. Again, in all three cohorts BMI was consistently higher for women in rural and remote areas than for urban women. Average BMI increased with time among the younger and mid-age women but decreased slightly among the older women.

The proportion of younger women in the underweight category (BMI <18.5) decreased with successive surveys. Over the period 1996-2003, the proportion in the overweight (BMI 25-30) and obese (BMI >30) groups also increased. The proportion of mid-age in the overweight and obese categories also increased over time: By Survey 3, 5.3% of the mid-age women had a BMI >25 compared with 9.7% in 1996. In contrast, BMI in the older cohort remained largely unchanged, apart from a slight increase in those who were underweight.

On average, the younger women gained 649 g a year, compared with 49.4 g in the mid-age group, while the older women lost 162 g a year. Average weight gain was significantly higher in younger than in mid-age women, and significantly higher in younger women in rural and remote areas than in younger urban women.

Longitudinal analyses of weight gain among younger and mid-age women in the study have shown that weight gain in occurring across all socio-economic groups.

After adjustment for confounders, the factors found to be associated with weight gain in younger women were:

• Having BMI outside the healthy weight range at the start of the study
• Sitting more than 4.5 hours a day
• Eating takeaway food
• Restrictive eating practices.

Factors associated with weight gain in mid-age women were:

• Quitting smoking
• Hysterectomy
• Menopause
• Low levels of physical activity (less than 150 minutes a week)
• High sitting time (more than 4.5 hours a day)
• Being overweight or obese in 1996, and with high energy intake

Although previous studies have shown cross-sectional relationships between BMI and health problems, the study is the first in Australia to be able to demonstrate the prospective relationships between weight gain and a range of health problems:

• Stiff and painful joints
• Back pain

Average annual weight change in grams

<table>
<thead>
<tr>
<th>NUMBER OF WOMEN</th>
<th>AVERAGE ANNUAL WEIGHT CHANGE (GRAMS PER YEAR)</th>
<th>95% CONFIDENCE INTERVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>3675</td>
<td>604 (372, 837)</td>
</tr>
<tr>
<td>Rural/remote</td>
<td>2074</td>
<td>725 (476, 973)</td>
</tr>
<tr>
<td>Total</td>
<td>5773</td>
<td>649 (520, 767)</td>
</tr>
<tr>
<td>Middle aged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>3360</td>
<td>515 (374, 655)</td>
</tr>
<tr>
<td>Rural/remote</td>
<td>5982</td>
<td>477 (346, 609)</td>
</tr>
<tr>
<td>Total</td>
<td>9342</td>
<td>492 (467, 517)</td>
</tr>
<tr>
<td>Older women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>2939</td>
<td>157 (71, 243)</td>
</tr>
<tr>
<td>Rural/remote</td>
<td>3838</td>
<td>166 (97, 234)</td>
</tr>
<tr>
<td>Total</td>
<td>6777</td>
<td>163 (121, 195)</td>
</tr>
</tbody>
</table>

Average weight (top), height (middle) and BMI (bottom) of women who reported these data at every survey.


Healthy ageing

The study provides a picture of ageing that challenges traditional stereotypes. At the time of the first survey in 1996, the women in the older cohort were aged 70 to 75. They were selected at random and represented the full range of health and functioning at that age. More than one third rated their health as excellent or very good at this time and fewer than 5% rated their health as poor. By Survey 3 in 2003, although the women were aged 73 to 78, the overall responses on self-rated health were unchanged.

At Survey 3, most of the women lived in houses (69%) or flats, units or apartments (21%). Fewer than 5% lived in retirement villages, nursing homes or hostels.

More than 90% were able to perform independent activities of daily living such as cooking, bathing and dressing. Eighty-three percent reported no difficulty seeing newspaper print (with glasses if necessary), 87% reported no difficulty hearing conversation (with a hearing aid if necessary) and 88% could bath and dress themselves without being limited by their health.

More than one third said they could walk at least a kilometre, 58% could walk half a kilometre and 73% could walk 100 metres.

More than half, however, reported difficulties with activities such as lifting and carrying groceries.

The most chronic conditions among the older age group are hypertension

* Continued on page 12

Survey responses and percentages of deaths ans withdrawals for older women for Surveys 1.2 and 3.

<table>
<thead>
<tr>
<th>SURVEY 1</th>
<th>SURVEY 2</th>
<th>SURVEY 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER</td>
<td>%</td>
<td>NUMBER</td>
</tr>
<tr>
<td>Respondents</td>
<td>12,632</td>
<td>10,633</td>
</tr>
<tr>
<td>No return</td>
<td>-</td>
<td>823</td>
</tr>
<tr>
<td>Withdrawal/lost</td>
<td>-</td>
<td>688</td>
</tr>
<tr>
<td>Died</td>
<td>-</td>
<td>648</td>
</tr>
<tr>
<td>Total</td>
<td>12,632</td>
<td>10,633</td>
</tr>
</tbody>
</table>

* Excludes women who had died, withdrew or were too ill by Survey 2
Physical activity levels in the general community are low and decreasing (AIHW, 2004). The typical physical working capacity and ability to undertake prolonged moderate or vigorous exercise is poor. This is because in the absence of specific, dedicated exercise time, the majority of people in developed countries such as Australia are becoming increasingly sedentary at work and at home, have low energy expenditure in leisure-time pursuits and have low participation rates in active transport.

Who is it for?

The SMA screening system is a tool for exercise professionals to use when deciding if a person is at a high risk for acute cardiovascular problems. For many people this is a deterrent and is related to the high dropout rates typically found for these new programs.

Stage 1 of the SMA pre-exercise screening system

The first stage of the screening system is a filter to screen out those people who are at a high level for exercise-related complications due to underlying cardiovascular, cerebrovascular, respiratory or metabolic diseases. These are people with known disease or who have signs or symptoms of disease. Other serious or potentially serious medical conditions that may be exacerbated during exercise are also important at this stage. It is recommended that this relatively small group of ‘high risk’ clients seek medical clearance before beginning an exercise program or undertaking aerobic fitness testing.

The questionnaire shown on page ….. is the tool used to identify who is at high risk at this stage. If a person answers ‘Yes’ to any of the questions in the questionnaire, they are considered to be in the ‘high risk’ group. There is, however, scope for the exercise specialist to use a level of professional judgement when interpreting these responses. For example, swelling or fluid accumulation about the ankles may be related to local joint problems or recent air travel rather than, for example, due to underlying cardiovascular pathology. For those with well controlled diabetes or stable cardiovascular conditions (coronary heart disease (CHD), cardiac failure, stroke and peripheral vascular disease (PVD)) there is generally no need to seek medical clearance before beginning a low – moderate physical activity program such as regular walking (NHF 2005). Also, other medical conditions that may be mentioned are essentially endless so there requires a level of interpretation in deciding if the risk of adverse effects outweighs the known benefits of individually-tailored regular physical activity.

Those who are NOT at high risk can begin low or moderate level physical activity without the need for medical clearance (see Stage 2 Procedures on page….. for specific guidelines and rare exceptions). These people may also proceed to stage 2 of the screening system if there is a desire to exercise at vigorous intensity levels or if there is an intention to undergo exercise testing to maximal levels.

Stage 2

The second stage of the screening system is used to determine those people who are categorised as moderate or low risk for exercise-related complications due to underlying cardiovascular, cerebrovascular, respiratory or metabolic diseases (or other medical conditions referred to in the guidelines).

Stage 2 identifies those at moderate risk who are either older and/or who have two or more risk factors for heart disease. For these clients they are classified as moderate risk and can undertake physical activity up to moderate intensity levels (for example, walking for the majority of people), without medical clearance. Stage 2 procedures and measures can also be used as a valuable adjunct in the general health appraisal of clients and to monitor changes in risk factor status over time and with lifestyle changes. Those who are ‘younger’ and who have less than two risk factors are considered low risk for exercise-related complications. They can also be tested to maximal levels without medical clearance or supervision.

This screening system was produced by Professor Kevin Norton of the University of South Australia, in consultation with members of SMA. Further details of the system can be found at the SMA website at www.sma.org.au

References


Choose health!
Be active!

Two Australian Government Ministers have jointly launched Choose Health: Be Active, a booklet to help veterans and older people generally to improve their health and wellbeing by listing a number of ways to include appropriate forms of exercise in everyday life.

The Ministers were De-Anne Kelly, Minister for Veterans’ Affairs, and Julie Bishop, Minister for Ageing.

Choose Health: Be Active was prepared by the two Ministers’ departments, in association with SMA.

The starting point is, as the Australian Government Physical Activity Guidelines state, that everyone should try to do at least 30 minutes of moderate intensity on most days of the week.

Why 30 minutes? Because, the booklet says, “30 minutes is needed to keep your heart, lungs, muscles and bones in good working order. If you can’t get to 30 minutes a day, don’t worry. Any amount of additional physical activity will improve your health.

“Choose Health: Be Active lists the four types of activity needed to keep people healthy – moderate fitness activities, strength activities, flexibility activities and balancing activities – and the kinds of exercise that can be done for each group.

The booklet suggests ways to make exercise easier, such as using fridge notes and other reminders, developing exercise routines, varying exercise and using exercise diaries or planners.

It sets out 12 dietary guidelines for maximum vitality, energy and health in older people, and suggests a number of exercises that can be done in the home in everyday activities such as waiting for the kettle to boil and talking on the phone.

“For many older Australians, remaining physically active can be a challenge,” the Ministers point out in the booklet.

“Choose Health: Be Active shows you simple ways to fit exercise and activity into your daily routine.

“Regular exercise, along with a balanced diet, can help you live life to the full, and to age in a positive, healthy manner.”

Choose Health: Be Active

Murali’s doosra: technology and the law in cricket

by Bruce Elliott, Jacque Alderson, Siobhan Reid and David Lloyd

Technology is playing an ever-increasing role in today’s society. Its influence has flowed to sport where technique modification and player movement based on video analysis, “instant replays”, commercial breaks during a game and the scrutiny of player behaviour from video are all common occurrences.

However, the use of technology to assess the legality of a bowling action in cricket is a more recent occurrence. With players now competing for very large contracts it is imperative that technique assessment is accurate. That is, similar results must be able to be obtained from different laboratories and over repeated trials from the same laboratory. Results must also be valid, that is, they must actually reflect what happens under match conditions. This paper will outline the system used at the School of Human Movement and Exercise Science (HM&ES) at The University of Western Australia to assess bowling (fast and spin) for the International Cricket Council (ICC).

The analysis system used in data collection must be able to produce angle data at the elbow, as the error tolerance currently provided by the ICC is 10° for fast bowling and 5° for spin bowling. Richards (1999) reported that opto-reflective systems (see reflective markers in Figures 1 & 2) have an error of approximately 1° in a laboratory environment, while the current error increases to 3–4° for video-based systems tested under the same conditions. Opto-reflective systems are generally used in laboratory environments and a 1° error would be appropriate for data capture in this environment. However, when bowlers wear a long sleeve shirt and are filmed from 50 m–70 m, as in match conditions, then the error associated with video-based analysis would increase. Bowlers with an upper limb abnormality, where axes of rotation are difficult to assess, must be tested in a laboratory environment. For these reasons a commercially available opto-reflective system (Vicon 612) was used to analyse the ‘doosra’ action of spin bowler Muttiah Muralitharan. A similar approach was also used in the testing of the Pakistan fast bowler Shabbir Ahmed.

Vicon Analysis System

Cameras

Twelve cameras operating at 250 Hz were strategically placed in a laboratory, so that they defined a calibration space of 5 m (long) x 2.5 m (wide) x 3 m (high). This permitted the full delivery action and initial ball flight to be captured on computer.

The laboratory opens on to an oval, which allowed Muthiah Muralitharan to use a full run-up and bowl on to a full-length pitch.

The 12 infra-red cameras were capable of operating at 1000 Hz with a resolution of 1.3 million pixels. However, 250 Hz was deemed sufficient to record all aspects of the bowling action in this particular case. The cameras performed two functions: the first was to illuminate the performance area with the high-powered software-controlled infra-red strobe lights and the second to track the reflection from each opto-reflective marker. During the bowling performance every marker must be viewed by at least two cameras for three-dimensional (3D) reconstruction of marker movement. In normal circumstances each marker, at any point in time, can be seen by more than two cameras. While the cameras are capable of detecting markers as small as 4 mm, at a distance of greater than 10 m, in this analysis markers of 1.4 mm diameter were used so that these could easily be tracked throughout the delivery.

Calibration

Calibration of the 5 m (long) x 2.5 m (wide) x 3 m (high) space occurs prior to collecting any bowling data. This basic setup procedure was linked to the calibration of each camera to a tolerance of 1.5 mm. Static bowler specific calibration trials to determine shoulder, elbow
and wrist joint centres (discussed below) are also captured prior to the collection of bowling data.

**Model**

Irrespective of what analysis system is used, the quality of data will also be a reflection of the “model” used to define joint centres and axes of rotation. The School of HM&ES has developed a "Full Body Model" for the analysis of movement. However, in this paper only the “Upper Body Model” related to the bowling arm in cricket will be discussed (Figure 1). These customised models have been written using Vicon Bodybuilder Bodylanguage software. The model interprets the positional data of the markers attached to the body during the bowling action (Figure 1A). Labels are assigned to each marker creating body segments (Figure 1B). From these segments an anatomical human-form representation is structured and segmental orientations and angles can be determined (Figure 1C).

The 3D reconstruction shown in Figure 1B & C requires accurate identification of joint centres for the upper limb. The following joint centre identification of joint centres for the upper limb. The following joint centre definition needs to be met:

- Ball needed to be of “good length” and spin in the appropriate direction.
- Ball delivery speed needed to be at the higher end of the range recorded from the 2002-2003 Sri Lanka v Australia Test Series.
- An expert cricket coach agreed that the ball was delivered in the appropriate manner.

**Wrist Centre**

Calculation of the wrist joint centre relies on the presence of two wrist markers placed on the styloid process of the radius and ulna (see Figure 2, right forearm). During an initial static calibration the position of the wrist markers are recorded relative to the position of another triad placed on the forearm (Figures 2 & 3). Notice how the orientation of this triad is across the lower third of the forearm rather than vertically down as with the upper arm triad. This placement allows for more accurate pronation/supination data. The wrist markers may be removed prior to bowling as seen in Figure 3.

**Data collection procedures**

Trials are typically collected until six successful deliveries have been recorded. To ensure that trials collected are as representative of the “match-environment as possible, the following conditions needed to be met:

- Ball needed to be of “good length” and spin in the appropriate direction.
- Ball delivery speed needed to be at the higher end of the range recorded from the 2002-2003 Sri Lanka v Australia Test Series.
- An expert cricket coach agreed that the ball was delivered in the appropriate manner.

**Conclusions**

It is our opinion that the only way to test the legality of the technique used by spin bowlers is in a laboratory, where a full pitch and run-up are available to the bowler. Where the error tolerance, as set by the ICC is low, it is imperative that extremely accurate data can be collected as with the opto-reflective system discussed above. In saying this it is also critical to match “Test Match” conditions as much as is possible. Fast bowlers may be able to be tested in a match environment with more success than with spin bowlers. However, the proviso here would be that they do not have any abnormality of the upper arm (hyper-extensible elbow, large “carry-angle”, or fixed flexion deformity at the elbow). In these cases the more accurate laboratory environment must again be used.

**References**


Beere, Elliott, Jacques Abdellah, Stefan Foul and David Harrison are at the School of Human Movement and Exercise Science and the Biomechanics Testing Laboratory (the International Cricket Council at The University of Western Australia.)

**Figure 2:** Determination of lateral elbow condyle (Picture courtesy of Tom Rovis-Herrmann)

**Figure 3:** Upper Body Model (not all markers can be scene (Picture courtesy of Tom Rovis-Herrmann)

**Figure 4:** Representative data from a bowler (upper arm was horizontal to the ground until release)
The 13th season of the AFL Injury Survey was completed in 2004. The initial survey year (1992) included Australian Football, Rugby League and Rugby Union injuries and the AFL has sponsored surveillance of its own competition ever since. The public release of the annual report, which has been made since 19961, makes the AFL injury survey the world’s longest running professional injury survey in sport that has been publicly released on an annual basis1,2. The survey also has a pivotal position in guiding the AFL Research Board to fund projects which study injuries that are common, severe and/or increasing in incidence in AFL players. Since 1997, the injury survey has accounted for every case of senior listed players missing games through injury in the home and away season. In 2001 this was extended to include rookie listed players and finals matches.

The basis for surveillance methods in the AFL is the van Mechelen paradigm.1 Table 1 shows the stages of the van Mechelen paradigm and summarises how the AFL injury survey has approached each of these over the past decade.

### Methods

The methods of the injury survey are now well established and have been previously described in detail3. Player movement monitoring essentially requires that all clubs define the status of each player each round to be either: (1) playing AFL football; (2) playing football but not playing football due to injury, or (4) not playing football for another reason.

#### Injury Survey

The definition of an injury is ‘any medical condition that prevents a player from participating in a regular season (home and away) or finals match.’ The major measurement of the number of injuries occurring is seasonal injury incidence measured in a unit of new injuries per club per season (where a club is defined as 40 players and a season is defined as 22 rounds). The major measurement of the amount of playing time missed through injury is injury prevalence measured in a unit of missed games per club per season, or alternatively percentage of players unavailable through injury. The recurrence rate is the number of recurrent injuries expressed as a percentage of the number of new injuries. A recurrent injury is an injury in the same injury category occurring on the same side of the body in a player during the same season. Therefore, by this definition, an injury of one type that recurred the following season was defined as a new injury in that next season.

#### Results

### Weekly player status

Table 2 details player status on a weekly basis over the past eight seasons. The ‘average’ status of a club list of 47 players in any given week was: 34 players playing football per week, 6-7 missing through injury and 2-3 missing through other reasons (such as suspension, being used as a travelling emergency, team bye in lower grade, etc). The injury prevalence (proportion of players missing through injury) was higher in 2004 than in 2005 but still low in terms of the historical average.

### Injury incidence

Table 3 details the incidence of the major injury categories. The injury incidence (number of new injuries per team per season) continued in 2004 at a level which was historically low. hamstring strains have been the most common injury in every year of the survey, with generally six of these injuries occurring per club per season and these injuries were again very common in 2004. Patellar tendinopathy, which has been a historically high recurrence rate, has become a substantially lower recurrence rate since 2001. The rate of recurrence for muscle strains is the subject of ongoing injury research. The rate of injury recurrence has been showing a steady decline over the last seven years, with 2004 having the lowest recurrence rate on record.

### Injury prevalence

Table 5 details the amount of missed playing time attributed to the most notable injury categories. In season 2004, hamstring also continued as the No. 1 injury in the game with respect to missed playing time, surpassing both gross and knee ACL injuries. Certain injury categories, such as concussion, knee and patellar tendinopathy injuries and calf strains exhibited historically very low prevalence during season 2004.
The only injury category which showed historically high injury prevalence in season 2004 was knee posterior cruciate ligament (PCL) injuries. The incidence of PCL injuries was not significantly different to that of previous seasons, but two ruckmen underwent PCL reconstructions (which is a rarely performed procedure) early in the season and therefore missed many games. This increased the average severity and overall prevalence of knee PCL injuries. This injury category is discussed in detail later in this report.

Analysis & discussion for significant injury categories

Knee anterior cruciate ligament (ACL) injuries

There have been 115 complete ACL injuries occurring in AFL matches (both senior and reserve grades) during seasons 1992-2004 inclusive, 27 of these occurred on the left knee and 88 on the right knee. Eleven have either had either player to player contact or an indirect contact mechanism (such as being kicked to the knee). Of these 88, 35 involved a landing mechanism, 14 involved indirect contact through tackling with the remainder change of direction while running. In addition, there have been 56 ACL injuries (left and right) occurring in training sessions and 1 occurring in a list player outside football. These occurrences are detailed in Table 6.

Over recent seasons, great attention has been paid to the possible contribution of ground conditions to injury rates, particularly with respect to knee ACL injuries. The overall injury prevalence has been consistently higher

in the teams based in northern states compared to teams based in Victoria and in games played earlier during the season (Table 6). It has been hypothesised that perhaps grounds are generally harder in the northern venues, which might lead to higher injury rates, although investigation has shown that grounds in the northern venues are generally not harder than venues in the teams based in northern states compared to teams based in Victoria and in games played earlier during the season (Table 6). It has been hypothesised that perhaps grounds are generally harder in the northern venues, which might lead to higher injury rates, although investigation has shown that grounds in the northern venues are generally not harder than venues in the teams based in northern states compared to teams based in Victoria and in games played earlier during the season (Table 6). It has been hypothesised that perhaps grounds are generally harder in the northern venues, which might lead to higher injury rates, although investigation has shown that grounds in the northern venues are generally not harder than venues in

Table 6 - ACL injuries occurring each season in AFL players

<table>
<thead>
<tr>
<th>SEASON</th>
<th>AFL MATCHES</th>
<th>AFL RESERVES</th>
<th>OTHER MATCHES</th>
<th>TRAINING SESSIONS</th>
<th>OUTSIDE FOOTBALL</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>1993</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>1994</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>1995</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>1996</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>1997</td>
<td>11</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>1998</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>1999</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2000</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2001</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>2002</td>
<td>2</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>2003</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>2004</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>47</td>
<td>14</td>
<td>58</td>
<td>21</td>
<td>175</td>
</tr>
</tbody>
</table>

Knee posterior cruciate ligament (PCL) injuries

The rate of knee posterior cruciate ligament (PCL) injuries has varied from year to year although the total injury incidence has not particularly increased from 1997 to 2004 inclusive. However, this injury is one major injury category which is more common and prevalent in a specific player position (the ruckman). Player position analysis and injury are not a major focus of the injury survey, as few players stick to a particular position over the course of an entire game. Running, marking, kicking, handpassing and contesting for possession are components of almost every position on the field. Aside from perhaps full-forward and full-back, the ruckman is the only position on the field with a unique task (ruck duties).

Details regarding the incidence of specific PCL injuries are listed in Table 7. More ruckmen have suffered PCL injuries since 1999, and three to four per year have suffered this in the centre bounce kick contest. At the same time fewer full-backs appear to have suffered this injury in falls around the ground, which may reflect the improvements in ground preparation producing softer playing surfaces.
The AFL injury profile continues to be consistently the most prevalent injuries in AFL players. The major findings of the 2004 injury survey are that:

1. ongoing rates of injuries remain low in historical terms;
2. recent trends in PCL injuries in ruckmen justify the recent centre circle rule change; and
3. concussion rates (including severity and recurrence rates) are very low, vindicating current management in AFL players.

Acknowledgments:
The authors and AFL Medical Officers would like to acknowledge the following personnel who contributed to the survey in 2004:

Peter Waller, Treve Jacques and Dr Brian Sando (medical services coordinator and doctor, Adelaide), Peter Stanton (physiotherapist, Brisbane), Dr Dave Barnett (doctor, Carlton), Dr Andrew Jowett, Gay Nicholls (doctor and physiotherapist, Collingwood), Bruce Cooper (physiotherapist, Essendon), Joe Boyle and Norm Tate (physiotherapist and football staff, Fremantle), Dr Jeanne McGinnvand and Moneca Inouye (Sherrin, Dockers), Chris Ward (physiotherapist, Hawthorn), Dr Andrew Daff (doctor, Melbourne), Dr Con Mitropoulos (Kangaroos), Dr Peter Barnes (doctor, Port Adelaide), Dr Greg Hickey (doctor, Richmond), Dr Ian Stone (doctor, St Kilda), Matt Cameron (physiotherapist, Sydney), Paul Tucker and Bill Sutherland (doctor and trainer, West Coast Eagles), Dr Gary Zimmerman (doctor, Western Bulldogs), Dr Peter Harcourt and Dr Harry Ungla (AFL Medical Officers), Rod Austin, Jill Lindsay and Andrew Demetriou (AFL administration), Ian Chivers and David Aldous (Institute of Land and Food Resources, University of Melbourne).

Champion data and all those acknowledged in the injury reports for previous years (particularly Dr Tim Wood who had a major administrative role during the early years of the injury survey) and all AFL Ground managers and staff.

References:


New rules have been introduced to limit the ruckman’s run-up, with the introduction of a 30-metre outer circle. The rationale for this change was to reduce the magnitude of any knee contact, while maintaining the spectacle of this unique contest, and thereby reducing the severity of any subsequent injury. It is expected that the trend of higher PCL injuries amongst ruckmen will be reversed, reducing the morbidity among ruckmen and extending their careers.

Hamstring injuries

Hamstring strains remain the most common injury in the AFL. Previous analysis of hamstring and other muscle strain data shows a high rate of recurrence. This current AFL data shows that management of these injuries has become more conservative over the last decade in the AFL. The mechanisms of hamstring injury in football are overwhelming when sprinting, bending to pick up the ball while running or attempting to break out of a tackle. The risk of recurrence is high and persists for three months after return to play because players often return with subtle strength deficits and/or biomechanical compensations. There is research identifying the role of the long head of the biceps as a predictor for safe return to play (without recurrence) from hamstring strains through the measurement of the size of the lesion. In a similar fashion to injuries overall, Table 10 shows that hamstring strains have decreased in incidence, prevalence, and recurrence rate over recent seasons, with little change in overall hamstring injury severity.

Conclusions

Conclusions

Concussion rates have been low and, if anything, declining over the last decade. It is acknowledged that the ‘true’ incidence of minor concussions is underestimated by the injury survey; in that there are a number of clinical cases of concussion that occur but do not result in games being missed, which therefore do not satisfy the injury survey definition. However, it is very apparent that these cases are critical to the injury survey definition. However, it is very apparent that these cases are critical to the injury survey and all those acknowledged in the injury reports for previous years (particularly Dr Tim Wood who had a major administrative role during the early years of the injury survey) and all AFL Ground managers and staff.

Table 10 - Key indicators for hamstring strains over the past eight seasons

<table>
<thead>
<tr>
<th>YEAR</th>
<th>INCIDENCE</th>
<th>PREVALENCE</th>
<th>SEVERITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>6.8</td>
<td>6.4</td>
<td>5.8</td>
</tr>
<tr>
<td>1998</td>
<td>21.0</td>
<td>22.6</td>
<td>21.4</td>
</tr>
<tr>
<td>1999</td>
<td>8</td>
<td>15.7</td>
<td>18.8</td>
</tr>
<tr>
<td>2000</td>
<td>3.1</td>
<td>3.3</td>
<td>3.5</td>
</tr>
<tr>
<td>2001</td>
<td>3.3</td>
<td>3.4</td>
<td>3.6</td>
</tr>
<tr>
<td>2002</td>
<td>3.7</td>
<td>3.5</td>
<td>3.2</td>
</tr>
<tr>
<td>2003</td>
<td>3.2</td>
<td>3.3</td>
<td>3.7</td>
</tr>
<tr>
<td>2004</td>
<td>3.6</td>
<td>3.5</td>
<td>3.4</td>
</tr>
</tbody>
</table>

The AFL injury profile continues to be consistently defined and published in both the sports medicine science at chat level, and in public media releases. Hamstring injuries, knee ACL injuries and groin injuries (including ovarian pain) are consistently the most prevalent injuries in AFL players.

It is pleasing to show the gradual decreases in injury incidence and prevalence, notwithstanding a higher prevalence in 2004 compared to 2003. There have been a number of PCL injuries that do not result in games being missed. Injury severity (average time off the field, having suffered a concussion in the same game, the lack of apparent consequences to the current management vindicates the current management of AFL medical staff.

New rules have been introduced to limit the ruckman’s run-up, with the introduction of a 30-metre outer circle. The rationale for this change is to reduce the magnitude of any knee contact, while maintaining the spectacle of this unique contest, and thereby reducing the severity of any subsequent injury. It is expected that the trend of higher PCL injuries amongst ruckmen will be reversed, reducing the morbidity among ruckmen and extending their careers.

Hamstring injuries

Hamstring strains remain the most common injury in the AFL. Previous analysis of hamstring and other muscle strain data shows a high rate of recurrence. This current AFL data shows that management of these injuries has become more conservative over the last decade in the AFL. The mechanisms of hamstring injury in football are overwhelming when sprinting, bending to pick up the ball while running or attempting to break out of a tackle. The risk of recurrence is high and persists for three months after return to play because players often return with subtle strength deficits and/or biomechanical compensations. There is research identifying the role of the long head of the biceps as a predictor for safe return to play (without recurrence) from hamstring strains through the measurement of the size of the lesion. In a similar fashion to injuries overall, Table 10 shows that hamstring strains have decreased in incidence, prevalence, and recurrence rate over recent seasons, with little change in overall hamstring injury severity.

Conclusions

Conclusions

Concussion rates have been low and, if anything, declining over the last decade. It is acknowledged that the ‘true’ incidence of minor concussions is underestimated by the injury survey; in that there are a number of clinical cases of concussion that occur but do not result in games being missed, which therefore do not satisfy the injury survey definition. However, it is very apparent that these cases are critical to the injury survey definition. However, it is very apparent that these cases are critical to the injury survey and all those acknowledged in the injury reports for previous years (particularly Dr Tim Wood who had a major administrative role during the early years of the injury survey) and all AFL Ground managers and staff.

Table 10 - Key indicators for hamstring strains over the past eight seasons

<table>
<thead>
<tr>
<th>YEAR</th>
<th>INCIDENCE</th>
<th>PREVALENCE</th>
<th>SEVERITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>6.8</td>
<td>6.4</td>
<td>5.8</td>
</tr>
<tr>
<td>1998</td>
<td>21.0</td>
<td>22.6</td>
<td>21.4</td>
</tr>
<tr>
<td>1999</td>
<td>8</td>
<td>15.7</td>
<td>18.8</td>
</tr>
<tr>
<td>2000</td>
<td>3.1</td>
<td>3.3</td>
<td>3.5</td>
</tr>
<tr>
<td>2001</td>
<td>3.3</td>
<td>3.4</td>
<td>3.6</td>
</tr>
<tr>
<td>2002</td>
<td>3.7</td>
<td>3.5</td>
<td>3.2</td>
</tr>
<tr>
<td>2003</td>
<td>3.2</td>
<td>3.3</td>
<td>3.7</td>
</tr>
<tr>
<td>2004</td>
<td>3.6</td>
<td>3.5</td>
<td>3.4</td>
</tr>
</tbody>
</table>
Ankle sprains and sports physiotherapists

By Tania Pizzari

Ankle sprains, particularly lateral ankle sprains, are one of the most commonly treated musculoskeletal injuries. Patients may present to a GP with a swollen and bruised ankle after an incident during sport, work or everyday activities. It may be a first time sprain or could be a recurrent injury. What has happened such that a patient attends a clinic? Perhaps x-rays are requested, non-steroidal anti-inflammatory medications are prescribed, crutches are provided, or exercises are suggested. Consider a routine referral to a physiotherapist?

Referral to a physiotherapist

While most simple ankle ligament sprains seemingly improve without intervention, there is evidence to support referral to a physiotherapist will improve recovery. Research shows early mobilisation and functional rehabilitation of ankle sprains result in better outcomes than if the injured ankle is immobilised or not rehabilitated at all. Physiotherapy management for acute ankle injuries involves appropriate reduction of pain and swelling, restoration of ankle motion, muscle conditioning, proprioception training and functional exercises to allow for a successful and timely return to sport, work or everyday activities.

Early referral is the key to a good outcome in this condition. Patients should be seen as soon after the injury as possible to avoid prolonging symptoms and impairment and to reduce the chances of a drawn out rehabilitation process. Rehabilitation can begin immediately, so there is no need to wait before a referral is considered. All patients can benefit from physiotherapy, not just those who are failing to progress through the natural recovery process.

Although a common and simple injury, evidence suggests specialist intervention will improve recovery of a sprained ankle.

Who to refer to?

Your local physiotherapist will be able to provide an appropriate rehabilitation service to assist you with achieving the best outcomes for your ankle sprain patients. Physiotherapists who are members of SportsPhysiotherapy Australia, a special group within the Australian Physiotherapy Association, are well placed to deal with all sports-related, musculoskeletal injuries and provide an adjutant to the care of your injured patients.

Tania Pizzari, PhD, BPhysio(Hons), is a physiotherapist in private practice, Lecturer at the School of Physiotherapy, La Trobe University, and Clinical Editor of Sportslink, the official magazine of SportsPhysiotherapy Australia.

To locate your nearest SPA member, visit www.sportsphysio.org.au

References

Sports Medicine Australia has entered into a joint venture with Elsevier and authors of the journal are invited to join this Reviewers Database from November 2005. To do so, you should send an e-mail with your areas of expertise, highest qualification and full address details to jsams@auaonline.com. There will also be the opportunity for reviewers to register at the Elsevier exhibition booth during the October 2005 Australian Conference of Science and Medicine in Sport in Melbourne.

Publication via Science Direct will also have a number of other significant benefits for our authors and the JSAMS readership. Electronic annexes attached to the published research, such as additional data, appendices, survey tools, etc., will be published on-line. “In press” manuscripts will be made available online as soon as the electronic file is available, usually within six weeks of acceptance, and prior to completion of the print issue.

In recognition of the larger number of high quality paper submissions that the JAMS has received over recent years, and the number of papers that are accepted for publication, we will also be moving to six issues per year from 2006. The first electronic issue will be available in February 2006.

These improvements to JSAMS will have a positive impact on both our readership and authors. With more readers, more people will cite papers we publish and our impact factor will increase. More authors will find JSAMS to be a great journal to submit to. I hope that you will be as excited about these improvements to JSAMS as the Editorial Team and I are. With these new directions, we will be well on our way towards maintaining our role as a leading publisher of international research relating to the medicine and science of sport, exercise and physical activity.
Comings, Goings, Happenings

Good news from the Commonwealth Government for exercise physiologists and sports physicians.

First, from 1 January next year, exercise physiologists will be able to provide Medicare services to sufferers of chronic and complex illness. This will (among other things) improve the team-based approach to treating chronic disease.

Marilyn Feenstra, SMA National President, called it a timely and positive step. SMA had long been an advocate of multidisciplinary medicine and has always regarded exercise physiologists as an essential part of this team.

But there was still a serious anomaly to be corrected in the professional status of exercise physiologists, she said, because, unlike other university-trained health professionals, their services were not GST-exempt.

SMA has lobbied the Government for a number of years on behalf of the exercise physiologists. The most recent case was during a meeting with Ms Julie Bishop, the Minister for Ageing, by SMA members Dr Rob Reid (SMA ACT President), Professor Caroline Finch, Professor Wendy Brown and Gary Moorhead (SMA CEO).

The other good news for SMA and sports medicine is that the Federal government has begun the formal process of evaluating the submission of sports physicians for specialist status.

---

Professor Peter Fricker (Director, the Australian Institute of Sport) writes:

“A small correction if I may. You have apologised to my colleague Dr Ken Maguire with reference to a statement from the ASC that I “was the first Medical Officer at the AIS” and that this statement is incorrect. The facts are that Ken was indeed the first staff doctor at the AIS, in 1982, but I was in fact the first medical officer when I acted in an honorary capacity from my private practice from the day the AIS started on January 26 1981. There was no other medical officer at the AIS during the first year of its operations and I was kept busy with regular attendance at training sessions etc. When Ken left the AIS at end-1982 I was appointed to the AIS staff and commenced duties on February 1 1983.

“I would add that Ken’s work in setting up the clinical services for the AIS is always acknowledged.”

---

National SMA has lost the services (and ever-cheerful company) of Dominic Feenan.

Dominic was National Safety Sport Program Coordinator, advertising manager of SMA publications and IT and general Mr Fixit at the national office.

The other good news for SMA and sports medicine is that the Federal government has begun the formal process of evaluating the submission of sports physicians for specialist status.

---

Nutrition and Fitness 1: Obesity, the Metabolic Syndrome, Cardiovascular Disease, and Cancer

Editor: AP Simopoulos
Published by Karger, Basel
(www.karger.com)
ISBN 3-8055-7944-6

Part 1 of the proceedings of the 5th International Conference on Nutrition and Fitness at Athens in June last year. Examples of papers:

Aaron DJ, Jekal Y-S, LaPorte RE: Epidemiology of physical activity from adolescence to young adulthood

Hwalla N, Sibai AM, Adra N: Adolescent obesity and physical activity


Willer A: Cancer risk reduction by physical exercise


---

Nutrition and Fitness 2: Mental health, Aging, and the Implementation of a Healthy Diet and Physical Activity Lifestyle

Editor: AP Simopoulos
Published by Karger, Basel
(www.karger.com)
ISBN 3-8055-7945-4

Part 2 of the proceedings at Athens. Papers include:

Ferrari SL: Osteoporosis: a complex disorder of aging with multiple genetic and environmental determinants

Lees SJ, Booth FW: Physical inactivity is a disease

Tapsell LC, Patch CS, Gillen LS: A new look at intersectoral partnerships supporting a healthy diet and active lifestyle: The Centre of Excellence in Functional Foods, Australia, combining industry, science and practice

Waxman A: Why a global strategy on diet, physical activity and health?

Lee PR: Nutrition and fitness policies in the United States.