



Prepared for
Australian Sports Commission

Subject
**Review of Junior Sport Framework
Draft Briefing Paper: Health and
Welfare of Junior Sport Participants
and Safe Delivery of Junior Sport**

Author
Chris Hallinan PhD

5 September 2012
UniQuest Project No: 715

UniQuest Pty Limited



UniQuest Pty Limited
Consulting & Research
(A.B.N. 19 010 529 898)

Level 7, GP South Building
Staff House Road
University of Queensland
Queensland 4072

Postal Address:
PO Box 6069
St Lucia
Queensland 4067

Telephone: (61-7) 3365 4037
Facsimile: (61-7) 3365 7115

Title

Junior Sports Framework Review – Draft Briefing Paper Topic: Health and Welfare of Junior Sport Participants and Safe Delivery of Junior Sport

Author's Declaration

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TABLE OF CONTENTS

1.	INTRODUCTION.....	2
2.	WHAT WE KNOW	2
2.1	Food Quality and Activity	2
2.2	Negative Health Behaviours	3
2.3	Anabolic Steroids.....	4
2.4	Eating Disorders and Weight Control Pressure.....	4
2.5	Problems with Too Much and Too Little Preparation.....	5
2.6	Quality of Facilities	6
2.7	Injury, Illness and Burnout	6
2.8	Overuse Injuries	6
2.9	Illness.....	6
2.10	Burnout.....	7
2.11	Thermoregulation	7
2.12	The Important Role of Parents, Adult Care-Givers and Families.....	8
2.13	Sexual Discrimination, Sexual Harassment and Sexual Abuse.....	8
2.14	Physical and Psychological Harassment	9
3.	WHAT WORKS.....	11
4.	WHAT DOES NOT WORK.....	12
5.	WHAT WE DO NOT KNOW.....	12
6.	ADVICE TO ASC	13
7.	REFERENCES	14

Junior Sport Framework (JSF) Project

Health and Welfare of Junior Sport Participants and Safe Delivery of Junior Sport

Chris Hallinan PhD

1. INTRODUCTION

Organised sports programmes for juniors are highly valued in Australia and are usually considered to be an important learning and growth experience (Light, 2010). Junior sports provides regular opportunities to develop leadership and social skills, and learn about teamwork (Jones, Dunn, Holt, Sullivan, & Bloom, 2011; Light, 2010). The positive and negative elements that may be encountered in junior sports are well documented and acknowledged (Coakley, Hallinan and McDonald, 2011). The safe delivery of junior sports participation is normally guided and regulated by national sports organisations but administered for most participants through local sports clubs throughout the entire country. Coaches, team managers and parents also play a vital role in the provision of a safe and healthy junior sports setting. This resource sheet provides important information about the safe delivery of junior sports programmes. It focuses upon a review of known information about safe delivery and identifies strategies that may be effective in providing safe and healthy junior sports settings.

2. WHAT WE KNOW

2.1 Food Quality and Activity

Sport-involved adolescents have better eating habits and nutrient intake than their non-sport-involved peers (Kroll et al. 2006) Junior sports participants have better dietary practices by eating fruits and vegetables daily and also tend to be more nutrition-conscious in their overall food choices (Baumert et. al, 1998; Pate, et. al, 1996). Sports participants regularly eat breakfast, were also more likely to include a dairy food group serving each day, and were less likely to add salt to their foods (Baumert et. al, 1998). In a cross sectional study of adolescents and physical activity in the UK, boys ate breakfast on more days per week than girls and older adolescents ate more fruit and vegetables than younger adolescents (Pearson et al.2009). In a

study examining saturated fat intake (butter and margarine) and activity levels, those with the highest activity levels used the least amount of butter or margarine. Those with the least activity used the most butter or margarine (Aamio, Kujala & Kaprio, 1997). Inactivity and poor eating habits are closely related in the age range of 11 to 16 year olds (Trost, Leven & Pate 2000). There is also body of research which reports a decrease in the risk of diabetes, heart disease, obesity, and other related diseases with regular participation (For example, see Beets & Pitetti, 2005; Elkins, et al.2004; Kawabe et al., 2000).

2.2 Negative Health Behaviours

Physical activity and sports participation levels have been linked to alcohol consumption and binge drinking (Miller et al 2003). For the most part studies have found higher rates of alcohol consumption among those junior sports participants as compared to non-participants. As well, these studies also noted that female sports participants, when asked, were less likely than males to report alcohol use within the previous 30 days (Pate, et.al., 1996). In a national study of 16,000 adolescents in the USA problem drinking most strongly linked to male adolescents who self-identified with a strong sports identity (jocks). Male sports jocks were not only more likely than non-jocks and females to engage in problem drinking (Miller et al. 2003) but the link with problem drinking and violent behaviour was highest among male sports jocks (Miller et al. 2006). Younger aged sports participants were also likely to experiment with alcohol than their non-participant peers. Among sixth graders, sports participants' experimentation was 10% lower than non-sports participants (Hastad et al, 1984). But in another study of 5th grade youngsters, participation in vigorous activity made no difference in the likelihood of experimentation (Felton et al, 1996).

Mays et al. (2011) assessed the published research concerning sports participation and alcohol use among adolescents and concluded that there were a variety of ways in which both sports participation and alcohol use were categorised. This made for confounding results at times. Some studies used category-only, others used frequency, while some used both. As well, some studies did not distinguish clearly between high level competitive or community based sports participation. Alcoholic drinking among adolescents has been linked to sport participation level, type of sport played, and gender. It has also been strongly linked to tobacco smoking in a study of over 3,294 adolescents in France where the research study found that alcohol use was 7 times higher in smokers compared to non-smokers (Challier, et al 2000). This research also found that while adolescent non-smokers were drawn to rugby, wrestling, volleyball, orienteering, mountain biking, and roller skating, the smokers were drawn to other sports. The potential problem with the latter situation, according to the authors, is that the

repeated meetings involved with adolescent sports practices and contests would place at-risk adolescents in settings that might be fertile for initiated or favouring drug use (Challier, et al, 2000).

2.3 Anabolic Steroids

The use of anabolic steroids is not reported as widespread but in some studies only 50.3 % of students volunteered information (Buckley et al, 1998). Thus, it is difficult to determine the actual level of usage especially since students might be reluctant to report using a prohibited substance. Reported steroid users were more likely to participate in football and wrestling than other sports and many indicated their main reason for using was to improve their sport performance (Buckley et al, 1989). However, recent research about steroid use among adolescents is not strongly linked to sports participants. Although steroid use is more likely in male football and wrestling than any other sports for adolescents, the evidence links steroid use more closely to certain deviant adolescent behaviours such as other illicit drug, alcohol, and tobacco use, fighting, suicide attempts, sexual risk taking, vehicular risk taking, and pathogenic weight loss behaviour than to sport. Furthermore, the rates of steroid use among adolescents are higher for male non-sports participants than they are for male sports participants and females (Miller et al, 2002a, 2000b).

2.4 Eating Disorders and Weight Control Pressure

The use of inappropriate weight control practices may affect juniors and may be more likely to occur in certain sports. In a study of competitive swimmers aged 9-18 years, girls were more likely to engage in weight loss whereas boys were more likely to attempt weight gain. In the use of unhealthy weight loss methods, the female competitive swimmers of the study were more likely than boys to engage in unhealthy weight loss methods such as fasting, self-induced vomiting, and diet pills. Boys used laxatives and diuretics more than girls (Drummer et al, 1987). When considering the pursuit of muscularity among boys one study found that boys shared similar behavioural problems to girls when associated with eating disorders. As with girls, boys were associated with negative body mass index and self-esteem issues, a perfectionist drive, perceived pressure to lose weight, and a likelihood to participate in sports that emphasise leanness (Ricciardelli and McCabe, 2004).

The type of sport in which junior girls participate has been linked to negative body image perceptions and weight control pressure. Girls who participate in stereotypically feminine sports (cheerleading/dance team, swimming, tennis, and volleyball) were found to be more

likely to report feeling overweight, attempt to lose weight, and use multiple weight-loss strategies compared with non-participants. Girls who participated in stereotypically masculine sports (basketball, field hockey, football, ice hockey, soccer, track and field, and wrestling) were not any more likely to report feeling overweight, attempt to lose weight, and use multiple weight-loss strategies compared with non-participants. The researchers acknowledged the absence of gymnastics as a stereotypically feminine sport in their study and therefore suggested that their findings would have found even higher difference had gymnastics been included in the study (Crissey, and Honea, 2006).

2.5 Problems with Too Much and Too Little Preparation

One long term study was not primarily concerned with junior sports participants but strongly linked obesity in adolescent years to lifelong restrictions with physical activity for women. The study tracked participants over several decades and concluded that women who were obese during teenage years were 8 times more likely to encounter difficulty walking 400 metres, climbing stairs, and lifting objects than those women who were lean during adolescence (Must et al, 1992). Similarly, a 25 year population study found that physical activity in adolescence was a reliable predictor of physically active adulthood for females and males. But, high fitness levels in adolescence were a predictor of adult activity for males only (Huotari et al. 2011).

Researchers have linked high intensity training with menstrual dysfunction. The results depend upon the intensity and the age of participants when the training began. But, on average, 30% of junior participants experience menstrual dysfunction while participating in high intensity sports (Bertelloni et al 2006).

The increasing shift from multi sports participation to single sport specialization has resulted in a dramatic increase in overuse injuries. Over 50% of all injuries to junior sports participants are now caused by overuse (Hill and Andrews, 2011). Overuse can also occur with multiple sports participants if they fail to obtain an adequate break period between each of the seasons and/or sports (Carter and Micheli, 2011). Too little or inadequate training for juniors is potentially hazardous when children are overweight (Carter and Micheli, 2011). Anterior Cruciate Ligament (ACL) injury rates are significantly higher for females and are more likely to occur in soccer, basketball, netball and softball (IOC Expert Panel, 2008; Shea et al., 2011).

2.6 Quality of Facilities

Unsuitable equipment, poorly maintained playing surfaces, inadequate or inappropriate protective equipment, and participating under inappropriate weather conditions are important considerations for maintaining the health and welfare of juniors in the sporting environment. As well, juniors are placed at a disadvantage in places where there is a relative lack of physical facilities. And when those places are considered to be a safety and/or crime risk, parents place restrictions on the informal play activities of their children (Dagkas and Quarmby, 2012). The risk of serious injury in junior sport requiring hospitalisation is higher in rural areas than in metropolitan areas (Lain, 2005).

2.7 Injury, Illness and Burnout

The negative effects of sport and physical activity can include injury, illness, and burnout. These negative effects have been observed in juniors, both boys and girls, and in a multitude of sports (Mackinnon and Hooper, 2000; Coakley et al. 2011). Girls may be more at risk of burnout than boys (Hooper et al. 1993) perhaps because female athletes are able to compete at an elite level earlier than males in many sports (eg swimming and gymnastics), and may be more likely than males to completely follow training programs without questioning them, and the menstrual cycle places additional demands on the female body.

2.8 Overuse Injuries

Overuse injuries are a concern in juniors as skeletal immaturity and asynchronous development of different types of tissues play a role in the susceptibility to injury. When high training loads are placed on immature musculoskeletal systems, the resulting aches and pains may not be short-term. Since growth rates are non-linear, an appropriate load during a non-growth period may not be appropriate during a growth spurt (Lord & Kozar, 1999). Moreover, the growth spurt requires energy and may have to compete for this with training demands.

2.9 Illness

Sport participants may be at risk of illness such as infectious diseases (eg hepatitis), skin infections, upper respiratory tract infections (URTI) due to a number of factors including:

- Close contact with others increasing cross infection
- Training in environments conducive to pathogenic micro-organisms (eg change rooms).

- Sharing of contaminated items (eg drink bottles).
- Suppression of the immune system during heavy training.
- Exposure to new environments when travelling to compete.
- Abrasions and other damaged tissue allowing transfer of microbes.

While moderate exercise is beneficial for the immune system (Mackinnon 2000; Nieman 1997) intense training and competition have been associated with frequent illness, mainly viral URTI (Fry et al, 1991; Mackinnon & Hooper, 2000). Immune function is suppressed for several hours immediately after a single intense session and for weeks or months during periods of intense training (Mackinnon, 1997).

2.10 Burnout

Although individual differences are very evident, the first indication that young athletes are overtraining often appears as changes in mood states such as increased tension, depression, fatigue and confusion, decreased vigour (Hooper et al. 1997). These are most obvious in young competitors driven by (a) the internal will to succeed and (b) the external pressure from others to perform. Causes relate primarily to high physical workloads with insufficient recovery. For example, research has consistently shown that four weeks of increased training results in overreaching or overtraining. Therefore it is recommended that training is periodised with mesocycles less than four weeks with a period of reduced training included for regeneration (Rewbottom, 2000). This allows the accumulation of fatigue and stress on the body to be controlled.

2.11 Thermoregulation

Thermoregulation is important particularly during extremes of heat and cold stress. Exertional heat illness (EHI) is among the leading causes of death in adolescent sports in the USA and is central to the ongoing debate surrounding pre-screening programmes (Maron, et al 2009). When the ambient temperature is warmer or colder than the skin, the body gains or loses heat and the addition of exercise may push young physiological systems of young athletes to their limits. There is also debate regarding the comparative efficiencies of adults and children to regulate temperature during participation. A number of studies conclude that children have less ability than adults to regulate body temperature and children shed less heat though evaporative sweating and more through the loss of heat through the skin plus radiation (Bass & Inge, 2001). However, current research does not indicate thermoregulatory differences in the heat between children and adults (Rowland, 2008). Wet bulb globe temperature (WBGT)

considering humidity, temperature and solar load is used by sports to quantify climatic stress. However, it underestimates the risk of heat injury for humid conditions and therefore different tables are used for low, moderate, and high humidity climates (Gonzalez, 1995). The additional factors of clothing and exercise intensity must be considered when sports are using the tables to determine whether competitions are appropriate.

2.12 The Important Role of Parents, Adult Care-Givers and Families

The role of parents (and other care-givers) in junior sport is critical to the young person's wellbeing and ongoing involvement. Supportive parents, care givers and families provide essential care, education and enthusiasm. In dual parent families, both parents are generally equally involved. In families involving male and female children, fathers are more linked to boys' sports and mothers to girls' sports (Wheeler, 2011). As a significant factor in serving to increase Muslim young women's participation in sport, older sibling (brothers mostly) are able to encourage involvement by serving as mediators (Kay, 2006). The dual dynamics of families and inter-family information transmissions play the key role in determining children's inclination to participate in sport and the sport selection(s) (Wheeler, 2011).

Parents and care-givers also are able to play a role in rationalizing their children's workloads as they can see the accumulative effect of sport, study and other demands on their children's health and wellbeing. Importantly, when aspects of sport are not going as the young person would wish, having someone to talk to about strategies for overcoming concerns is invaluable. The difficulty for parents is getting the right balance on the continuum from disinterest to overbearing involvement and being able to read the young person's changing needs for support on this continuum. Parents have become more involved in and concerned about the participation and success of their children in junior sports competition. In advocating their children's best interests, parents are now more likely to behave in extreme ways (Coakley, Hallinan & McDonald, 2011).

2.13 Sexual Discrimination, Sexual Harassment and Sexual Abuse

The positive dimensions of the sporting environment can be destroyed by sexual discrimination, sexual harassment and sexual abuse. These practices can be viewed on a continuum of inappropriate conduct, but there are clear distinctions between each practice. Sexual discrimination involves denying opportunities or providing a 'chilling' sporting environment for participants either individually or collectively. Sexual harassment involves sexually orientated comments, lewd comments or sexual innuendos, practical jokes based on

sex, physical contact, fondling and kissing as well as bullying based on sex. Sexual abuse involves incest, sexual assault, rape, forced sexual activity, anal or vaginal penetration, and rewards or privileges based on sexual favours.

Unfortunately sport provides opportunities for sexual discrimination, harassment and abuse because of the power accorded to coaches, in particular. These adults have considerable control over the athletes in terms of skill acquisition, improvement and selection, parents in terms of success for their child and themselves, administrators in terms of success for the sporting organisation.

Fortunately there are several practices that can be adopted to minimize the opportunities for sexual discrimination, harassment and abuse. It is recommended that sporting organizations:

- Develop a screening policy for all coaches, administrations and parents involved in junior sport.
- Produce official policies about relationships between coaches and athletes, meetings between coaches and athletes, travelling practices with athletes, appropriate handling practices relevant for specific sports, and objective performance based selective criteria.
- Provide compulsory training sessions dealing specifically with all aspects of harassment, abuse, and discrimination (Brackenridge, 2008; Fasting & Brackenridge, 2009).
- Appoint a Harassment Contact Officer and a Toll Free line available for athletes, coaches, parents and administrators.
- Develop a formal complaint system ensuring all cases are extensively investigated (Breckenridge 1997; Donnelly 2006).

The sources of a coach's power base – a close coach-junior sports participant relationship, legitimate authority and a successful reputation – are inherently positive qualities that should serve junior participants well (Haudenhuyse et al, 2012). However, the research findings reveal that these power bases can be used negatively (Sterling & Kerr, 2009). Reynolds and Taylor (2002) investigated the perceptions of abuse in sports coaching on the premise that the practices of sports had become so normalised that coaches and competitors were conditioned to expect abuse, sledging and other forms of inappropriate behaviour.

2.14 Physical and Psychological Harassment

Young people generally are happiest in sport environments providing clear organization, discipline, leadership, fairness, encouragement and security. They do not enjoy sporting

environments lacking these attributes and drop out of sport when harassment makes the environment negative.

Harassment includes mistreatment in many forms (physical and psychological) including verbal abuse and intimidation, physical bullying and acts of violence, teasing, innuendo and taunting. Often, adults are unaware they are making the sport environment unpleasant for young people. It may not be what they are saying or doing but how they are saying or doing something that makes young people feel the sport is not for them. For example, denigrating children when they are attempting to build their skill base is not conducive to long-term involvement. Physical and mental threats and assault not only of young people, but also among officials, administrators, coaches, and parents is not a healthy environment, especially for children. A recent concern is the abuse of referees when these referees are young people acting as volunteers.

Codes of behaviour, protocols and mechanisms for dealing with inappropriate behaviour from whatever source are designed to encourage positive behaviours so young people can enjoy their sport in whatever their role. The health and welfare of juniors must be a central focus to everything that is provided for juniors in the sporting environment. The best sport practices result in juniors feeling healthy, happy and secure, provide a foundation for long-term involvement with the ultimate aim for young people to experience the benefits sport can provide during their lifetime.

3. WHAT WORKS

Juniors who participate in multiple sports suffer fewer overuse injuries than juniors who specialise in single sports.

In an attempt to prevent the alarming increase in serious injuries (Hill and Andrews, 2011) to junior baseball pitchers, restrictions on number of pitches per match were implemented. The PitchCount rule was accompanied by a mandatory rest period.

There is a measurable reduction in ACL (a ligament that stabilises the knee joint) risk for participants, particularly females, who complete well designed injury prevention programmes. However, the programmes require the collaboration of all stakeholders including the governing bodies (IOC Expert Committee, 2008).

In a pilot programme conducted with year 8 students in 3 northeast Florida schools, researchers designed a sports-based intervention programme which resulted in preventing alcohol use and promoting physical activity (Werch et al, 2003). The intervention consisted of a 10 minute consultation with a trained nurse regarding prevention measures followed by one of three types of follow-ups. The results suggested that there may be positive outcomes from carefully designed interventions as the participants reduced alcohol volume and frequency. As well, increases in the frequency of vigorous and moderate physical activity were recorded (Werch et al, 2003).

4. WHAT DOES NOT WORK

For instance, organisations need to be careful when changing policies to deal with the increases in overuse injuries. To prevent overuse injuries, some baseball organisations had restricted juniors to a maximum number of matches pitched during a given period. However, some juniors would throw 10 pitches in one inning but 25 pitches in the next. Similarly, some juniors would throw 60 pitches in one match and 120 pitches in another. As such, many organisations now use a pitch count which restricts junior pitchers to a fixed number of pitches followed by a mandatory rest period.

Travelling to and participation in weekend tournaments where competition extends through the entire day and participation on year-round training without an off season.

Coaching practices that do not respect the specific needs and learning stages of the junior participants. That is, priority is placed upon coaching the sport rather than coaching the child.

5. WHAT WE DO NOT KNOW

We do not understand the dynamic associated with stakeholders' acceptance resistance, or rejection of formal guidelines which specifically address health, welfare and safety in junior sports.

6. ADVICE TO ASC

Based upon a review of the current injury risk involving knee structures and junior sports participants, research is needed into the effectiveness of prevention/intervention programs. As well, the research should determine the ages at which the programmes should be implemented.

Monitor the health and well-being of juniors by rigorous ongoing formal and informal evaluation of procedures by administrators.

Provide programs for participants, parents, coaches, sports trainers and administrators to reduce risk of disordered eating, anabolic steroid use, misuse of alcohol, and inappropriate weight loss practices.

Adapt equipment, facilities, games/events etc so they are appropriate for the maturity of the young person and conducted only in safe environments (e.g., appropriate climatic conditions). The important role of parents must be recognised and they should be provided with education programs to help their children benefit from physical activity by providing appropriate support and monitoring for warning signs of imminent concern.

Coaches should constantly assess their training programs for meeting the seven essential principles of training (ie progression, overload, specificity, variation, individualisation, adaptation, reversibility).

The coping capacity of juniors who are training and competing intensely should be monitored by using a variety of tools including self-reporting by the athletes in daily training logs.

Guidelines on member protection and inappropriate behaviour management.

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