

Training habits and injuries of Masters' level football players: A preliminary investigation.

Abstract

Objective: To profile training habits and injuries in football players participating in a national Masters' tournament.

Methods: A cross-sectional retrospective study design was used to survey male football players attending the 2008 New Zealand Masters Games. Information regarding player demographics, football injuries, football related training, and risk factors for injury were collected.

Results: 199 players were recruited, with a median age of 44yrs (range 35-73) and a median football playing history of 15yrs (range 0-66). Irrespective of age, 112 (84%) players included a warm-up and 104 (78%) included a stretching regime in their regular training programme. In the 12 months prior to the tournament, 128 football related injuries were reported by 93 players, (64 injuries/100 players or 46 injured players/100 players). The most frequently injured region was the lower limb; specifically the lower leg (n=23), ankle (n=18), hamstring (n=17), knee (n=15), and Achilles tendon (n=15).

Conclusion: This study provides a preliminary insight into the training habits and injury profiles of Masters' football players. Despite all players including some form of injury prevention strategy in their training, a significant number of players experienced an injury in the 12 months prior to the tournament.

Key words: football, soccer, Masters' athlete, injury, training, age groups

Introduction

Increasing numbers of people in later-life are training for and competing in team or individual sports (McPherson, 1984; O'Brien-Cousins, 1992). It is well accepted that exercise is important in preventing or reducing changes in structure and function of the human body associated with aging, and in maintaining a healthy and disease free lifestyle (Mazzeo et al., 1998). The Masters Games are part of an international movement aimed at promoting and encouraging mature athletes to participate regularly in sport and activity, with the understanding that competitive sport can continue throughout life and improve personal well-being, health and fitness levels. The New Zealand (NZ) Masters' Games is an annual event where over 7000 athletes (aged 30 years and over) participate in a wide range of sports including football (soccer).

It is estimated that over 200 million people worldwide currently participate in organised football and this number is predicted to rise with an increase in economic development in third-world countries; the associated emphasis on healthy lifestyle choices resulting in increased longevity of an aging world population (Olsen et al., 2004). However, an increase in sports participation also results in an increase in related injuries and the associated costs and morbidity. Despite the increasing popularity of football among older athletes, little is known about the training habits, injury prevention strategies and injury histories of this group; all of which are key elements for the development of targeted injury prevention strategies.

The aim of this project was therefore to investigate components of training, injury prevention and injury occurrence in football players attending the 2008 ACC¹ NZ Masters Games.

¹ Accident Compensation Corporation: New Zealand's accident compensation scheme that provides 24-hour no-fault personal injury insurance cover for injury including sports injury and was the major sponsor for these games.

Methods

A descriptive cross-sectional study design was used to randomly survey male football players at the 2008 ACC* NZ Masters Games during the first round of football competition. A questionnaire was developed by the research team that took into account the recent consensus statement on football injury definitions and data collection procedures (Fuller et al., 2006). The short (5-10min) questionnaire was administered by the research team to a random sample of players present at the football venue over the first two days of competition. Information was obtained on: player demographics (age, general health, playing history and football involvement, level of football competition and participation in other sports); football related training habits (skill or endurance based activities and injury prevention habits such as stretching, warm-up, cool-down etc.); possible injury risk factors (previous injury, type/severity), and treatment received.

The data from the questionnaire was anonymised, coded, and entered into a spreadsheet. participants were categorised into age groups assigned by the Games organisers (*e.g.* 40-44, 45-49 yrs etc.) and descriptive statistics were generated for the data using SPSS version 14 (SPSS Inc, Chicago, Illinois, USA). Informed consent was obtained from all subjects and the project approved by the University of Otago Human Ethics Committee.

Results

Of the 738 registered male football players at the 2008 NZ Masters Games, a cohort of 199 (27%) were surveyed. The median age of the group was 44yrs (range 35-73) with a median football playing history of 15yrs (range 0-66). The greatest numbers of players were within the 40-44 and 45-49 age groups (Figure 1). The majority of the study participants played for a club in

an organised competition (53.8%) while 42.2% participated in football at a social level. Of the 199 players, 174 (87%) reported participating regularly in one or more physical activities outside football; the most common of these included golf (14.9%), running (14.3%), swimming (12%), and tennis (10.3%) (Figure 1).

Training habits

The majority of study participants (66.8%) typically trained for football between 1-4 hours per week during the season. Of these players, 112 (84%) included warm-up and 104 (78%) included flexibility in their regular training programme. The percentages of players within each age category that spent time on flexibility, weights and endurance as part of the regular training programme generally decreased with age (Figure 2).

Injury data

In the surveyed cohort, 128 football related injuries were reported in the preceding 12-months by 93 players (64 injuries/100 players or 46 injured players/100 players). Of the 128 reported injuries the most commonly injured region was the lower limb 105 (82%). The lower leg (n=23), ankle (n=18), hamstring (n=17), knee (n=15), Achilles tendon (n=15) and groin (n=7) were the most frequently cited injury locations (Table 1). The younger age groups 35-39 and 40-44 had the highest injury rates, at 76% and 75% respectively. Of the reported injuries, 67.3% occurred during games and 32.7% during training. The median time off sport due to injury was 2-days (range 0-365) with physiotherapists (n=47) and massage therapists (n=12) providing the majority of injury treatment.

Discussion

Participation in sport by older athletes is becoming increasingly common as the median population age of western countries increases and third-world countries develop economically. Despite the continuing global growth and popularity of Masters Sports events, there is limited research available on these athletes. Injury to the older athlete can present a unique challenge to sports medicine professionals, with common musculoskeletal injuries presenting alongside age related changes and underlying pathologies.

This preliminary study is the first to provide an insight into the training habits and injury profiles of Masters level football players. The majority of football players surveyed at the 2008 ACC NZ Masters Games were involved in some level of organised football, as well as being involved in additional regular activity outside football; suggesting a commitment to life-long physical activity and exercise. Participation in football can offer athletes not only the benefits of regular exercise, but also the added psychological and social health benefits associated with team sport. (McAuley, Elavsky, Jerome, Konopack, & Marquez, 2005).

Component training for Masters athletes remained relatively consistent across all age groups (Figure 2) (Starkes, Weir, & Young, 2003). The athletes's training time was equally distributed between fitness and skill acquisition despite the differing levels of sport history and football experience. Irrespective of age, most players incorporated classic injury preventative strategies such as warm-up and stretching in their training. This information adds to the current knowledge surrounding the microstructure of training practices in aging athletes.

Forty-six percent of the 199 players recruited into this study reported at least one injury in the preceding 12 months. A limitation in the design of this study was that it was cross-sectional and did not include collection of exposure data. Accurate calculation of injury incidence would allow direct comparison to published injury data for younger (Elias, 2001, Kakavelakis, Vlazakis, Vlahakis, & Charissis, 2003; Merron, Selfe, Swire, & Rolf, 2006) and professional football players (Merron et al., 2006; Nielsen & Yde, 1989), where injury incidence has been calculated at between 10 and 35 injuries/1000 match hours (Dvorak & Junge, 2000).

In this study 85 injuries occurred during matches. If we assume an exposure of 90 match minutes per player during a 20 week competition season for 199 athletes (5970 hours); this results in an estimated incidence rate of 14 injuries/1000 match hours. This rate would be considered to be at the lower end of the scale and may represent the presence of a “survivor” group of players, similar to the “healthy-worker effect”, whose ability to continue to participate in football during their later years is related to their ability to maintain an injury free state in their younger years. Although Masters level football is a competitive sport, players might have also adjusted their playing style, through experience, to avoid high risk situations such as rapid accelerations, changes in direction and aggressive tackling as part of a self modulated injury prevention strategy.

Alternatively, the estimated incidence rate may be distorted by an overestimation of exposure. Masters athletes, particularly social athletes, often limit their match time through increased rest periods and substitutions during games. However, overall, the preliminary data from this study suggests that Masters football and associated training carries a relatively low risk of injury.

The majority of injuries in this study occurred to the lower limb and during a match, and while the injury location is comparative to other age groups, (Inklaar, 1994) our data demonstrates a high percentage of hamstring injuries. Interestingly, the recent football injury classification model (Fuller et al., 2006) does not include this specific injury or location and we suggest it is included in future revisions to enhance its relevance to this older age group. Two-thirds of all reported injuries in this study occurred during match time which mirrors findings in other studies (Merron et al., 2006). This suggests that the match situation should be the primary target for injury prevention strategies by sports medicine personnel.

Despite the players indicating that they included some form of basic injury prevention strategy in their preparation, injuries still occurred. Our survey methodology was not designed to explore the specific validity of these activities nor the players' attitudes and understanding of these strategies. However, there remains little consensus in the literature regarding the true effect of general injury prevention strategies including warm-up and stretching.

The preliminary findings of this study are limited by the retrospective cross sectional design and the semi-structured random sampling of players. Training and injury information recall over the 12-month survey period, as well as the fact that injured players may not have attended the games are also considered limitations of the study.

The primary aim of this study was to initiate investigation into a specific older population of football players in order to generate discussion and promote further research on injury incidence in Masters athletes. With an aging population and the current public health focus on healthy lifestyle participation, it is expected that there will be a continuing increase in persons playing

football at the Masters' level in the future. It is therefore vital that sports medicine professionals should understand injury and training habits of Masters athletes in order to assist them in maintaining continued participation in sport.

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Number and location of Injuries by Age Groups						
Injury Location	Age group categories (number of players)					Total injuries across age groups
	35-39 (n=43)	40-44 (n=61)	45-49 (n=60)	50-54 (n=23)	55+ (n=12)	
hamstring	7	6	4	0	0	17
knee	5	4	5	0	1	15
ankle	3	9	4	1	1	18
Achilles tendon	2	6	4	1	2	15
lower leg	2	10	9	2	0	23
groin	2	3	1	0	1	7
sternum/ribs	4	0	1	2	0	7
other	8	8	9	1	0	26
Total (number of players)	33 (27)	46 (32)	37 (25)	7 (6)	5 (3)	128 (93)

Table 1: Number of injuries by body location per total reported injuries within the individual age groups categories

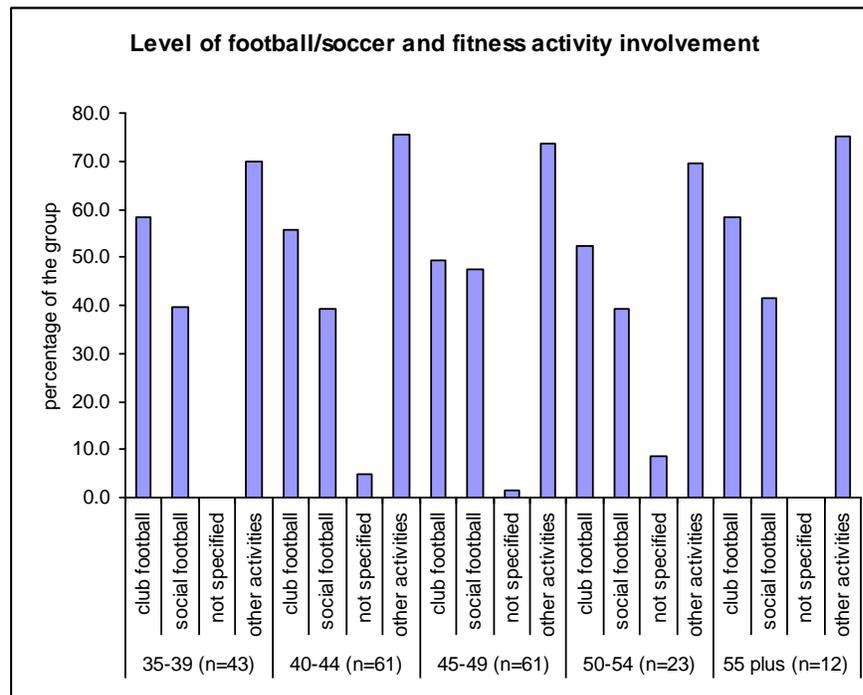


Figure 1: Level of involvement in football and other fitness activities within the individual age categories

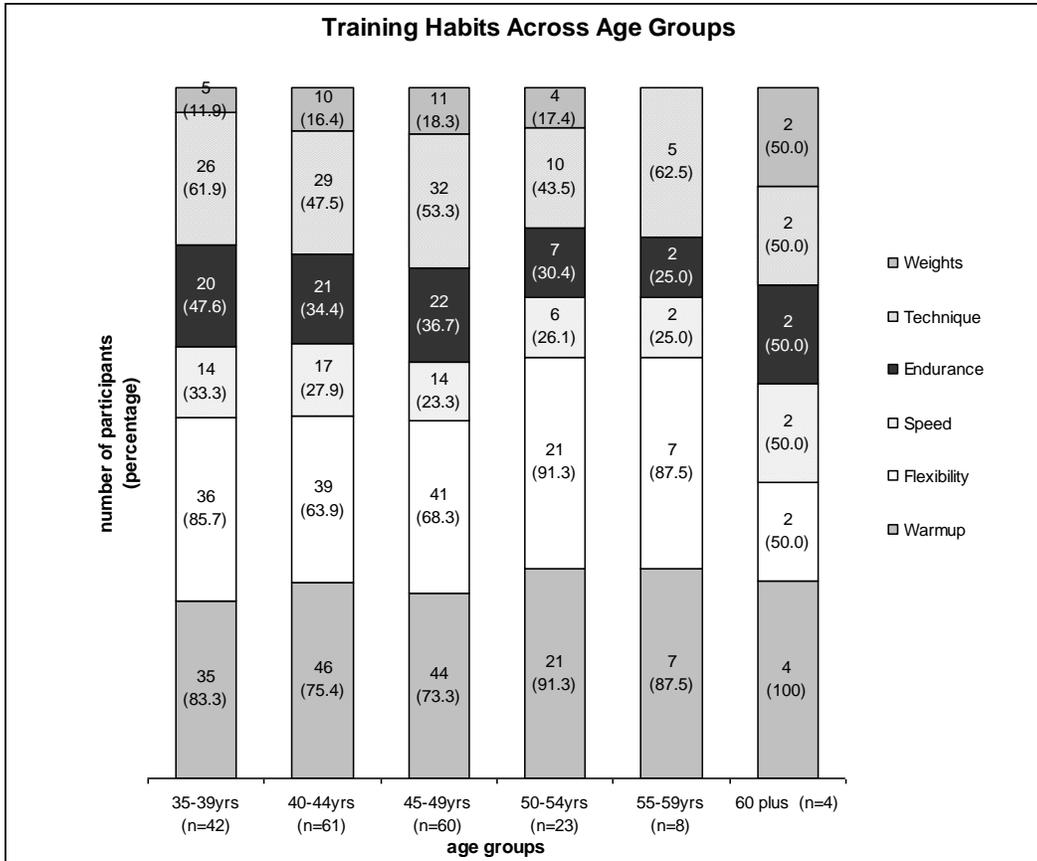


Figure 2: The number (percentages) of athletes within the age categories that spent time on warm-up, flexibility, speed, endurance, technique (skill) or weight training during a normal weeks training.