ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 6, Issue, 12, pp.10952-10955, December, 2014

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

NUTRITIONAL, PHYSICAL FITNESS AND ANXIETY PROFILE OF HOCKEY AND FOOTBALL PLAYERS- A COMPARATIVE ANALYSIS

***Sobana, R. M. and Dr. Josephine Nirmala Many**

Department of Home Science, JBAS College for Women, Chennai-18, Tamilnadu, India

ARTICLE INFO

Article History:
Received 21st September, 2014
Received in revised form
04th October, 2014
Accepted 04th November, 2014
Published online 30th December, 2014

Key words:

Nutritional status,
Physical fitness,
Level of anxiety,
Hockey players,
Football players.

ABSTRACT

Sports accomplishments are determined by a progressive training program, adequate physical fitness, a well balanced diet and sound mind. Team sports like hockey and football are physically demanding contact sports with high intensity sprints, place a unique physical and mental demand upon its players, which when understood will enable a more scientific approach to performance. This study aimed to analyze and compare the nutritional, physical fitness and anxiety profile of the hockey and football players. About 43 and 38 male collegiate hockey and football players were selected during an intercollegiate tournament and assessed through anthropometry, diet survey, Aapherd physical fitness tests and Marten's SCAT Scale for anxiety. The results showed that the majority of the hockey players were staying in hostel and were from low income families. Except height and muscle mass, a non significant difference was observed in other anthropometric measurements between the groups (165±15, 170.55±6.08cm and 52.51±7.47, 49.99±8.63 Kg). The muscular strength, agility and flexibility were better in hockey players. 47% of the football players were found to be less anxious than hockey players (25%). A significant difference in anxiety was found between the groups. Periodical nutrition and psychological counseling by trained professionals is essential along with regular training to improve the player's health, nutritional status, physical fitness and to reduce anxiety inturn promote their athletic performance.

INTRODUCTION

Athletic success is influenced by anthropometric characteristics, physical fitness, good nutrition and sound mind (Singh *et al*., 2010). An athlete's fitness for high intensity sports is majorly contributed by body composition with higher lean body mass and less fat mass, which are advantageous to their execution. Optimal nutrition is important both to improve performance and to promote healthy dietary practices in the long-term (Jonnalagadda *et al*., 2001). The Dietetic Associations around the world recommend that athletes of all ages in organized sports to engage in healthful and balanced nutrition practices that promote optimal growth along with performance (Sai, 2007). During competitions, expectations, perfectionism, fear of failure, lack of confidence induce feelings of anxiety of athletes (Aidan, 2004). But unpleasant state of mental uneasiness ie anxiety causes physical and psychological discomfort, loss of self confidence and disrupts the ability to compete at an extreme level. Athletes with better fitness both physical and mental are more aware of the playing environment, their surroundings and are less likely to be injured (Ferguson, 1999).

****Corresponding author: Sobana, R. M.***
Department of Home Science, JBAS College for Women, Chennai-18, Tamilnadu, India.

Team sports like hockey and football are physically demanding contact sports with high intensity sprints which require short bursts of near maximal effort and hence place a unique physical and mental demand upon its players. The players must combine optimal nutrition, speed, strength, agility, power and endurance along with their training skills for improved performance. The understanding of the physical and the mental demands of the sport will enable a more scientific approach to the training of the players (Raven *et al*., 1976). The anthropometric and physiological characteristics of male hockey and football players have been well researched and documented separately. However, scant literature is available on the comparison between male collegiate hockey and football players. To fulfill the void of literature, the present study was undertaken with the broad aim to analyze and compare the difference between hockey and football players at college level with regard to nutritional status, physical fitness and psychological variable.

Objectives of the Study

1. To assess the nutritional status, physical fitness and level of anxiety of hockey and football players.
2. To compare the nutritional status, physical fitness and level of anxiety between hockey and football players.

MATERIALS AND METHODS

Selection of sample: About 43 and 38 male hockey and football players were selected from Anna University Intercollegiate tournaments held during the academic year 2012-13.The players who had minimum 3 years of playing experience and who were regularly practicing their respective sports were selected using purposive sampling technique after getting a written consent from the players and their coaches.

Collection of data: To elicit socio economic background and dietary intake of the selected players a self developed questionnaire was used. The data was collected during their stay in the university hostel for the tournament. The purpose of the study was briefed and confidentiality of their response was assured to the players. The questionnaire was distributed, doubts were clarified and collected back.

Assessment of nutritional status

The nutritional status that has a direct bearing on performance was assessed through anthropometry and diet survey.

Anthropometric assessment: Anthropometry is the systematic collection and correlation of measurements such as body size, shape, proportion and body composition of the human body. The standing height, body weight and circumferences (mid upper arm, waist and hip) of the players were measured using digital weighing scale, portable stadiometer and flexible inch tape respectively following the standard procedures (Mehtab Bamji *et al*., 2005).

Dietary Assessment: The food consumption of the players was recorded by 24 hours dietary recall method. The percent adequacy for food and nutrient intake was calculated and compared with suggested daily allowances for athletes by Satyanarayana (1985).

Assessment of physical fitness: The physical fitness variables to be assessed were selected based on the discussions with experts, feasibility, availability of tools, and the relevance to the present study. The physical fitness variables such as power, agility, muscular strength, speed and cardiovascular endurance were assessed in the players before their practice session following the procedure mentioned in Aapherd Physical fitness test Manual (Table 1).

Assessment of the Level of anxiety: The level of anxiety of the players was assessed using Marten's Sport Competition Marten *et al.* (1990), which is a simple, rapid and validated tool, and the scores interpreted as <17: Low, 17-24: Moderate, >24: High level of anxiety.

Statistical analysis: The Statistical Package for the Social Sciences (SPSS; version 18.0) was used for the data analysis. Percentages, Mean, standard deviations and Independent t tests was used to assess overall differences in the selected variables between hockey and football players. A level of probability at 0.05 levels was assumed to draw significance.

Table 1. Physical Fitness test administration

S.No	Fitness Variables	Test	Criterion measures
1	Power	Vertical Jump Test	0.1 cm
2	Agility	10m Shuttle Run	Seconds
3	Muscular Strength	Sit Ups	No. per seconds
4	Speed	50m Run	Seconds
5	Cardiovascular endurance	Harvard step test and Pulse Rate	No per minute and beats per minute

RESULTS

I. Socio economic profile of the Hockey and Football Players: The distribution of the players according to the age, residence and family income are depicted in Figure 1. Majority of the players selected were in the age group of 17-19 years. 65% of the hockey players were residing in hostel, in comparison with 45% of the football players. Sixty three and twenty eight per cent of hockey players were from low and middle income group respectively compared to 26 and 50% of football players.

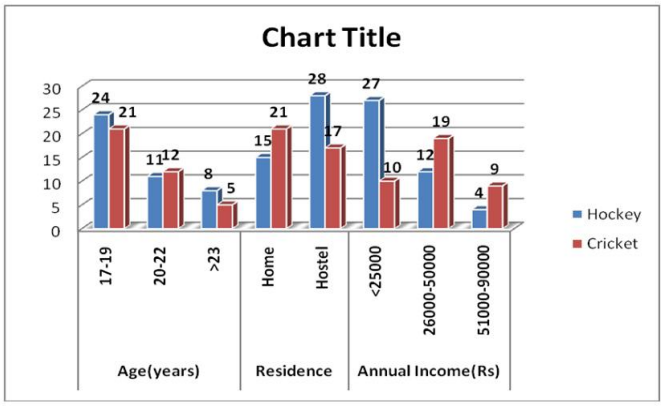

Figure 1. Socio Economic Profile of the Players

II. Anthropometric Parameters of the Players: The mean height and weight of both the groups when compared with All India Standard for male athletes (166cm and 51.8Kg), revealed that football players were taller than hockey players and both the groups were heavier than the standard value (Table 2). The body mass index, waist to hip ratio and body composition levels were found to be normal in both the groups.

Table 2. Anthropometric measures of the players

Physical Attributes	Hockey Mean ± SD	Football Players Mean ± SD	p-Value
Height (cm)	165±15	170.55±6.08	0.003*
Weight(cm)	58.1±9.77	59.25±7.34	0.553 NS
Body Mass Index	20.92±3.09	21.47±3.56	0.457 NS
Mid Upper Arm Circumference (cm)	24.22±1.82	23.73±2.99	0.383 NS
Waist Hip Ratio	0.828±0.07	0.844±0.06	0.328NS
Percentage Body fat	10.53±3.04	11.15±2.73	0.336NS
Muscle mass (Kg)	53.69±5.75	51.75±7.87	0.0001*
Lean Body Mass (Kg)	52.51±7.47	49.99±8.63	0.17NS

*Significant at 5% level, NS- Not Significant

Between the groups, body mass index, waist hip ratio and percent body fat were higher in football players whereas mid upper arm circumference, muscle mass and lean body mass were higher in hockey players. A non significant difference was observed in all the anthropometric measurements except height and muscle mass between the groups.

III. Dietary Intake Profile of the Players: The diet survey done on the players showed that all of them were non vegetarians and had a meal intake frequency of 4 times a day. From the player's 24 hours dietary recall record, it was found that the nutrients were consumed at levels less than the recommended allowances in both the groups. The intake of energy, protein, fat and calcium were high in football players compared to hockey players, whose carbohydrate consumption was high, which showed a significant difference between the groups. The high intake of fat by football players was also reflected in their high body fat percentage (Table 3).

IV. Physical Fitness Profile of the Players: The comparison of physical fitness between hockey and football players is shown in Table 4. The fitness variables like power and speed were found to be better in football players, in contrast to muscular strength, flexibility and agility in hockey players. The cardiovascular efficiency (CES) of both the groups was in the low average category, but the mean CES of football players was high (71.56), compared to hockey players (61.57). The statistical test was found to be significant in strength, agility, speed and CES between the players Chandrasekeran *et al.* (2012) and Jamie *et al.* (2008).

were residing in hostel. A significant difference in height and muscle mass was found which is similar to Justin *et al.* (2007).

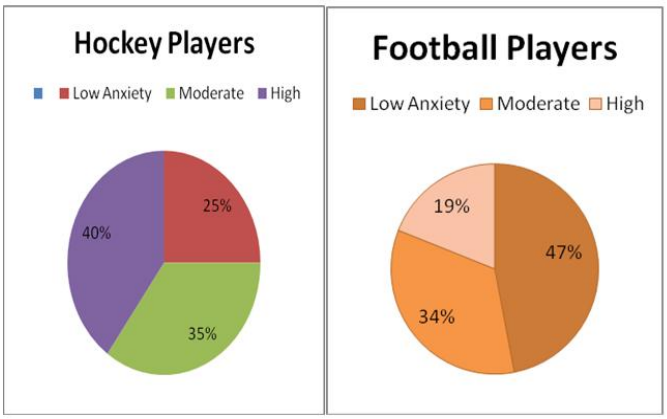

Figure 2. Sports Competition Anxiety Level of the Players

The findings of dietary profile showed a significant difference in carbohydrate consumption and energy percent from carbohydrates. The high intake of fat by football players was also reflected in their high body fat percentage. A high fat intake by team event players was observed by Ferguson (1999). Field hockey is a high intensity activity sport with a multidirectional nature. The ability to change direction rapidly while maintaining balance without loss of speed-that is, agility-is therefore an important physical fitness component necessary for successful performance in field hockey Archana *et al.* (2012).

Table 3. Mean nutrient intake of the players

Name of the Sport	Energy (K.cal)	Carbohydrate (g)	Protein (g)	Fat (g)	Calcium (g)	% of Calories From CHO
Hockey	3071±116.9	441.97±15.74	121.4±35.3	103.2±25.3	981.47±501.9	57
Football	3120±249.6	392.26±19.86	132±14.5	109.5±17.6	1440±151.2	50
t- value	0.749NS	12.3 *	1.84NS	1.31 NS	0.736 NS	
RDA	3000-6000	400-600`	135-225	120-200	1500-2000	

*Significant at 5% level. NS- Not Significant

Table 4. Physical Fitness Profile of the players

Physical Fitness	Hockey	Football
Muscular Strength	23.52±0.7*	19.5±4.85
Agility	19.95±15.98	14.86±2.98*
Flexibility	10.9±2.49	7.28±2.10NS
Power	57.99±9.66	59.60±7.03 NS
Speed	6.97±0.39	7.34±0.35*
Cardio Vascular Efficiency	61.57±9.12	71.56±6.77*

V. Anxiety Profile of the Players before competition: The level of anxiety of the players prior to the competition was assessed using Marten's SCAT Scale and compared between the groups (Figure 2). Majority of the hockey players (40%) experienced high level of anxiety, when compared to only 19% of football players. Thirty five and 47% of hockey and football players had moderate level of anxiety. Between the groups, a significant difference was seen in the anxiety levels before competition.

DISCUSSION

Majority of the hockey and football players selected were in the age group of 17-19 years. Most of the hockey players

The fitness variables like flexibility and agility were better in hockey players, whereas muscular strength, power and speed were found to be better in football players, which is in tune with the findings of Bandyopadhyay (2007) and Durant *et al.*, (2007) who compared the variables between football and volleyball players, hockey and soccer players respectively. The good flexibility and agility of hockey players is due the demands of the game that require them to wield the hockey stick to pass the ball. Between both the groups a significant difference in cardio vascular efficiency was recorded. An optimum level of stress and anxiety is necessary for optimum level of sports performance, which is found in both the groups, that is similar to the studies of Kumar *et al.*, (2011) and Muthulakshmi (2012) who had found average level of anxiety in Kho Kho players and swimmers. Most of the hockey players had high anxiety score (>24). This finding is in tune with Kim (2009) who had reported higher anxiety scores by high intensity sports athletes. A decline in sports performance will occur, when the anxiety level exceeds the optimum.

Conclusion

Physical training along with nutrition, fitness and mental health are the underlying factors for athletic success. The results of

the study showed no difference in nutritional, physical fitness and anxiety profiles of both hockey and football players. A significant difference in nutritional profile viz height, lean body mass, carbohydrate intake and physical fitness variables agility, speed, cardiovascular efficiency and level of anxiety was observed between the players. Players of high intensity activity sport with a multidirectional nature like football and hockey need nutritional counseling to improve their health and body composition. The ways to deal with stress and anxiety is also equally important for competitive athletes. Excellent coaching to improve physical fitness, periodical monitoring, diet and psychological counseling with the help of trained professionals is essential to improve the player's nutritional, physical and mental profile in turn their overall performance. It would be of interest to continue such a study in female athletes and between other sports.

REFERENCES

Aidan P. Moran, 2004. Sports Exercise Psychology: A Critical Introduction, Psychology Press.

Archna Sharma, Varishtha Tripathi and Shyamal Koley, 2012. Correlations of anthropometric characteristics with physical fitness tests in Indian professional hockey players. *Journal of Human Sport and Exercise,* Vol 7 (3): 698- 705.

Bandyopadhyay, A. 2007. Anthropometry and body composition in soccer and volleyball players in West Bengal, India. *Journal of Physiological Anthropology*, 26(4): 501-505.

Chandrasekaran, S., Anbanandan, A., Suthakar Krishnaswamy and Annida Balakrishnan, 2012. A Study of Selective Motor Fitness Components Empowers On Playing Ability among Low and High Performers of State Level Football Players. *International Multidisciplinary Research Journal,* 2(3): 54-60.

Ferguson, N.L.1999. An Assessment of the Dietary Habits of College Hockey Players. *Journal of the American Dietetic Association*. Sep Vol 99(9), Supplement: A39.

Jaime F. Burr, Roni K. Jamnik, Joseph Baker, Alison Macpherson, Norman Gledhill and E. J. Mcguire, 2008. Relationship of physical fitness test results and hockey playing potential in elite-level ice hockey players. *Journal of Strength and Conditioning Research*, Sep Vol 22(5):1535-1543.

Jonnalagadda S.S., Rosenbloom, C.A. and Skinner, R. 2001. Dietary practices, attitudes, and physiological status of collegiate freshman football players, *J. Strength Cond. Res.,* 15: 507-513.

Justin J. Durandt, Juliet P. Evans, Paul Revington, Allan Temple-Jones and Robert P. Lamberts, 2007. Physical profiles of elite male field hockey and soccer players – application to sport-specific tests. *SAJSM*, Vol 19 (3): 74-78.

Kumar, M. and Gladykirubakar, S. 2013. Comparative analysis on anthropometrical variables between batsmen and medium pace bowlers in cricket. *Star. Phy. Edn.,* Vol.1 (4): 19-24.

Martens, R., Burton, D., Vealey, R. S., Bump, L. A. and Smith D. 1990. Development and validation of the Competitive State Anxiety Inventory-2. In R. Martens, R. S. Vealey, and D. Burton (Eds.), Competitive anxiety in sport (pp. 117-190). Champaign, IL: Human Kinetics.

Mehtab Bamji, Prashad Rao, N. and Vinodini Reddy, 1996. Textbook of Human Nutrition, Oxford and IBH Publications.

Muthulaksmi, P. and Sylvia Subapriya, 2012. Anxiety level of the female athletes before the event. Proceedings of the International Conference on Sports and Nutrition, Macmilan Publishers India Ltd: 492-496.

Raven, P. B., Gettman, L. R., Pollock, M. L. and Cooper, K. H.1976. A physiological evaluation of professional soccer players, *British Journal of Sports Medicine,* 10, 209-216.

Singh, M., Singh, M.K. and Singh K. 2010. Anthropometric measurements, body composition and physical parameters of Indian, Pakistani and Sri Lankan field hockey players, *Serbian Journal of Sports Sciences*, 4(2):47-52.

Sports Authority of India(SAI),2007.Nutrition and Hydration Guidelines for Excellence in Sports Performance

Satyanarayana, K., Rao, N. B. S., Rao, M.S. and Malhotra, M.S. and Malhotra M.S, 1985. Recommended Dietary Intakes for Indian Sportsmen and Women. NIN, Hyderabad.

****