



ISSN: 2456-4419

Impact Factor: (RJIF): 5.18

Yoga 2019; 4(1): 283-285

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www.theyogicjournal.com

Received: 18-11-2018

Accepted: 21-12-2018

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Comparative study of aerobic and anaerobic capacity between intervarsity football & hockey players

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Abstract

The purpose of this study was to compare the aerobic and anaerobic capacity between football and hockey players. To achieve this purpose, 10 male football players and 10 male hockey player's Kurukshetra University, Kurukshetra was selected as the subject for this study. Age of the subject ranged from 19-25years. The aerobic capacity and anaerobic capacity was measured with help of cooper's 12 min run/walk test and Sargent jump- Lewis Nomogram. Aerobic capacity (ml/kg/min) = $35.9712(\text{distance in miles for 12 min run-walk}) - 11.2878$ 't' test was applied to compare the Aerobic and Anaerobic Capacity between Football and Hockey Players, The level of significant was fixed at 0.05 levels. In the light of the findings, it was concluded that no significant difference exists between the mean of hockey and football players in relation to anaerobic and aerobic capacity.

Keywords: Aerobic, anaerobic capacity, football, hockey players

Introduction

Aerobic capacity is the ability to mobilize energy for continuous performance of specific movement for prolonged time i.e. capacity for prolonged physiological functioning under continuous supply of required oxygen under conditions of required oxygen completely available the glucose molecule is completely broken down to CO₂ and H₂O, and energy is made available as needed. To enable a person to continue an activity for prolonged period, continuous flow of oxygen has to be ensured to the working muscle for liberation of energy. The aerobic capacity of a person can be measured by the maximum amount of oxygen consumed by the working muscular in one minute (VO₂ max).

The aerobic capacity (VO₂ max) of a person depends upon the factors as: amount of oxygen which can be extracted by the blood from the atmosphere, amount of oxygen that can be transported from the lungs to the working muscle, amount of oxygen taken up by the muscle cells from the blood, amount of oxygen of glycogen stores in the muscles and liver. Anaerobic capacity is the ability to mobilize energy during activities of intense nature i.e. executing intensive work with explosive action in short duration of time, such as kicking the football faster and for explosive take-off in jumps, maximum rate for about two to three minutes under water swimming etc.

football and hockey players frequently performs different rapid and sudden movements as quick development of force, sprinting, jumping, changing, direction, high power shooting, different body impacts etc. Therefore the players require high-intensity anaerobic capacity to perform various burst actions in actual situations. Anaerobic capacity is the ability to perform at maximal capacity for short periods of the time and to minimize the amount of lactic acid production in the working muscle at a level of insufficient oxygen availability.

Hypothesis

It was hypothesized that there would be significant difference of aerobic and anaerobic capacity between the football and hockey players.

Methodology

The purpose of this study was to compare the aerobic and anaerobic capacity between football and hockey players.

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To achieve this purpose, 10 male football players and 10 male hockey player’s Kurukshetra University, Kurukshetra was selected as the subject for this study. Age of the subject ranged from 19-25years. The aerobic capacity and anaerobic capacity was measured with help of cooper’s 12 min run/walk test and Sargent jump- Lewis Nomogram. Aerobic capacity (ml/kg/min) = 35.9712(distance in miles for 12 min run-walk) - 11.2878.

Statistical technique

‘t’ test was applied to compare the Aerobic and Anaerobic Capacity between Football and Hockey Players, The level of significant was fixed at 0.05 levels.

Table 1: Mean and Standard Deviation of Hockey and Football group of Kurukshetra University, Kurukshetra

Variables	Groups	N	Mean	Std. Deviation
Anaerobic capacity Kgm/sec	Hockey	10	91.8	18.56
	Football	10	102.4	15.66
Aerobic capacity Ml/kg/min	Hockey	10	43.82	7.69
	Football	10	39.89	8.86

Fourth and Fifth column of table -I reveals the mean and standard deviation of Anaerobic capacity Hockey (91.8±18.56), Football (102.4±15.66) Aerobic capacity ml/kg/min (Hockey 43.82 ±7.69 Football 39.89±8.86) respectively.

Table 2: Significant Difference of Mean on Anaerobic capacity between Hockey and Football Players

Variable	Group Mean		Mean Diff.	Σ Dm	‘t’
	Hockey Players	Football Players			
Anaerobic Capacity	91.8	102.4	10.6	17.17	1.38

*Significant at .05 level of confidence. $t_{.05} (18) = 2.101$

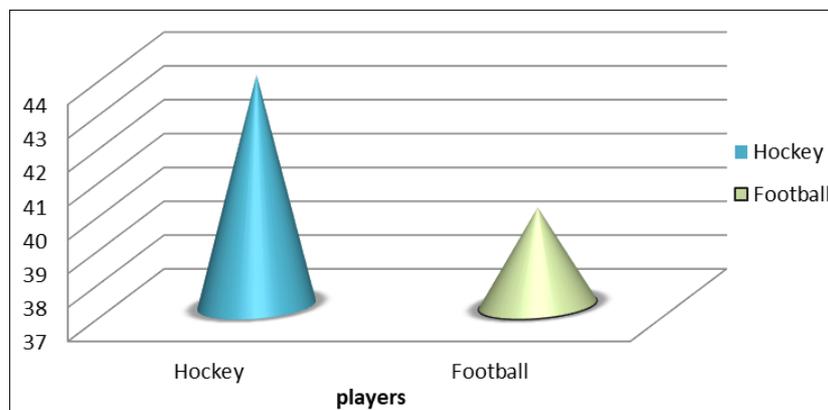


Fig 2: Graphical representation of Aerobic capacity between Hockey and Football players

Discussion of Findings

No significant difference exists between the hockey and football players in relation to anaerobic and aerobic capacity. This insignificant difference can be attributed to the fact that nature of the game (hockey and football) demands more or less equal amount of effort. The pace of the game is more or less similar. Thus, there was no significant difference in relation to anaerobic and aerobic capacity between hockey and football players.

Conclusions

In the light of the findings, it was concluded that no significant difference exists between the mean of hockey and

It is evident from table- II that there was no significant difference between the mean value of hockey and football players on the scores of Anaerobic capacity since the obtained value of ‘t’ (1.38) was less than the tabulated value of ‘t’ (2.101) which was required to be significant at (18) degree of freedom with 0.05 level of confidence.

Table 3: Significant Difference of Mean on Aerobic capacity between university Hockey and Football Players

Variable	Group Mean		Mean Diff.	Σ Dm	‘t’
	Hockey	Football			
Aerobic Capacity	43.82	39.89	3.93	8.30	1.057

*Significant at .05 level of confidence

$t_{.05} (18) = 2.101$

It is evident from Table-III that there was no significant difference between the means of hockey and football players on the scores of Aerobic capacity since the obtained value of ‘t’ (1.057) was less than the tabulated value of ‘t’ (2.101) which was required to be significant at (18) degree of freedom with 0.05 level of confidence.

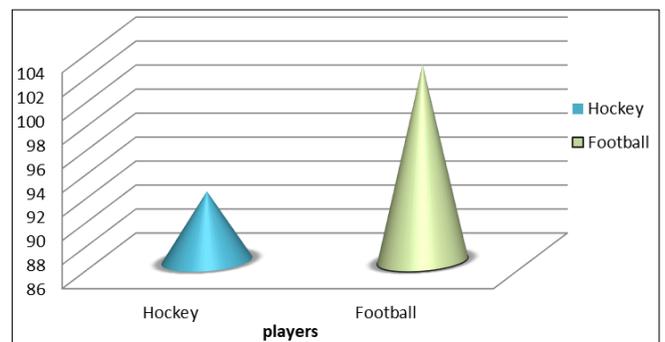


Fig 1: Graphical representation of anaerobic capacity between Hockey and Football players.

football players in relation to anaerobic and aerobic capacity.

References

1. Mathews Donald K, Fox Edward L. The physiological Basis of Physical education and Athletics Philadelphia: WB Soundlers company, 1976.
2. Mathews Donald K *et al.* Aerobic and Anaerobic efficiency, 34 June, 1963.
3. Norway Sports in Oslo. The marwegion confederation of sports.
4. Paperescos N. Prospects of the Activities and Research of Sports medicine for a period of time as for as can be foreseen Report of Eleventh session of the International

- Olympic Academy at Olympia Athens: Hellenic Olympic committees, 1971.
5. Prokoyo Ludaring. The contribution of Sports medicine to the improvement of performance Report of the seventh session of the international Olympic academy at olympiaathens: Hellenic Olympic committee, 1977.
 6. Reilly Thomas, Science and Soccer, London: E & FN Spon, 2003.
 7. Sanze Rico J. Soccer Elite Players, ww.sportssci.org/ency/drafts/soccerdite.doc.
 8. Taylor Henry L, Rowell Loring B. Exercise and metabolism Science and medicine of exercise and sport 2nd ed, warren R. Johnson and E.R. Buskirk London: Herper and Roul Publishers, 1974.
 9. Uppal AK. Principles of sports Training, Friends publications Delhi, 2001.
 10. Wilgus William Eugene. A comparison of efficiency between aerobic and anaerobic work, Completed research in Health, Physical education and Recreation, 1963, 5.
 11. Bhanot JL, Sidhu LS. Maximal Anaerobic power in Indian National Hockey players. British Journal sports medicine. 1983; 17:1.
 12. Bhanot JL, Sidhu LS. Maximal Anaerobic Power in National Level Indian Players, British Journal Sports Medicine. 1980; 15:4.
 13. Caru *et al.* Maximal Aerobic and Anaerobic muscular in football Players. The Journal of Sports Medicine and Physical Fitness. 1970; 10:2.
 14. Caw B *et al.* Maximal Aerobic and Anaerobic muscular power in football players. The Journal of Sports Medicine and Physical Fitness. 1970, 10.