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A comparative study on handball male and female national level players in relation to their physical and physiological perspective

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Abstract

The study was Compare the selected Physical fitness and Physiological variables between male and female national level Handball players. The study was an experimental research, the selected physical fitness and physiological handball players such as flexibility, endurance, agility, explosive strength, heart rate, vital capacity, and cardiovascular endurance were measured. Analysis of Data were applied to check the significant difference between the group. Physical both male and female or different level of age group, and higher level like national level, taking a large number of subjects.

Keywords: handball male, female national level players and physiological perspective

Introduction

Sport is one of the avenues of man's never ceasing strive for excellence. Its uniqueness lies in the intimacy between the physical happenings of human bodies and their repercussions on their minds as well as in the general reconcilability of the social and aesthetic values which sport engenders. Sport evokes experiences that are exclusively human and independent of the changing forms, patterns and customs of a civilization which involves profoundly modifying concepts of our environment.

The game of Handball is not very old. Although Handball has been played in different forms with different names having some similarity of the game like 'hazanz', 'torball' and 'handbold' and other. Present Handball, as having played on of Olympics is small court Handball.

It is believed that this game is originated from Germany. Hazana on the other side is game from Czechoslovakia, which is still played there, which has many similarities of Handball. Prof. Vaclovkaras give the first formal rules in 1905. 'Handball' which has also alike qualities a Handball was introduced by Prof. Holger Nelson in 1898. In 1907 another Nelson elaborated the rules and organized competition and recommended the formation of federation in 1915 max. Edien combined some games (roftbold, volkerball, korfbal) named a game indoor during the winter months although the ball was quite behavior and without bladder. In 1919 Prof. Karlschelz of Berlin named a game. 'Handball' in which was similar to soccer with 11 players at each side. The ball having used was a volley or soccer ball. This game bought ups and became very popular till 7 a side Handball was introduced. The first international competition for men and women was held in the year 1925 and 1930 in Vienna and Austria respectively.

According to Clarke, H. Harrison (1976) in a society where materials values predominates, participation solely for pleasure, recreation and allied benefits in any activity such as sports, that demands much time, energy and self-discipline is not likely to be very popular or widely practiced doctrine, especially when the nations of the world are openly using sports as an approach to national fitness and International prestige

When performing an optimal physical working demands analysis, observations and measurements during actual match-play have to be carried out. Physical test results cannot directly be considered as real on-court physical demands.

However, an on-court demands analysis of elite team handball players may benefit from physical test results, which can provide additional knowledge about the players' physical

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performance. They can be used to evaluate to what extent the physical profile has adapted to the locomotive and technical demands imposed by years of elite team handball training and match-play. Consequently, it is highly relevant to perform separate and specific physical tests supplemented by anthropometric measurements in elite team handball players.

Physiological profiles and physical test results varied between playing positions in both male and female players, with wing players performing better in the Yo-Yo test (intermittent running test) and showing superior jumping performance and repeated sprint running capacity compared to backcourt players and pivots.

Body anthropometry seems to have an important influence on playing performance because it is highly related to playing positions for both genders. Pivots are the heaviest and tallest of all playing positions, concurring with results obtained in male elite players from Croatia, Germany, Denmark and Norway. This likely reflects a high consistency between players' body anthropometry and the physical requirements of, e.g. pivots during match-play. Thus, large body mass likely has substantial importance for successful pivot playing performance due to the high frequency of in-fights and duels with opponent players. This indicates that high levels of muscle strength and RFD are essential physical performance elements in this playing position.

In contrast, wing players are lighter and smaller than all other players, which, from a physical point of view, is in accordance with the physical demands imposed on this playing position. Because of the reduced body contact both in offence and defence compared to other playing positions, high body mass and muscle strength seem of less importance for wing players. The lighter weight and smaller size of wing players enable these players to repeatedly perform rapid high-intensity movement patterns over short distances, while covering a large total distance of running per match. In general, anthropometric statistics from international team handball tournaments reveal a trend towards heavier players among the best teams, especially for male players.

The aim of the present study was to examine potential differences in the physical demands imposed on male vs. female adult elite team handball players during match-play.

Methods

Male and female elite team handball players were monitored over a six and five season time span, respectively. Each player was evaluated during match-play by use of video recording and subsequent computerized locomotive and technical match analysis. Furthermore, physiological measurements during match-play, physical testing and anthropometric measurements were performed.

Results

Female players (FP, N.=82) covered a longer mean total distance per match (4693 ± 333 m, group means \pm SD) compared to male players (MP, N.=83, 3945 ± 538 m) when playing full time ($P<0.01$). FP exercised at a greater relative workload (79.4% of VO₂-max) than MP (70.9% of VO₂-max, $P<0.05$), but performed less high-intense running per match (2.5% of total distance covered) than MP (7.9%, $P<0.01$). FP also spent less time standing still (10.8% of total effective playing time) compared to MP (36.9%, $P<0.001$) and showed fewer activity changes (663.8 ± 99.7) compared to MP (1482.4 ± 312.6 , $P<0.001$). MP received more tackles in total in offence (34.5 ± 21.3) and performed more tackles in total in defence (29.9 ± 12.3) compared to FP (14.6 ± 9.2 ,

20.7 ± 9.7 , $P<0.05$). Furthermore, MP performed more high-intense technical playing actions per match (36.9 ± 13.1) than FP (28.3 ± 11.0 , $P<0.05$). The mean body height and body mass differed between MP (189.6 ± 5.8 cm, 91.7 ± 7.5 kg) and FP (175.4 ± 6.1 cm, 69.5 ± 6.5 kg, $P<0.001$).

Conclusions

Elite team handball is a physically demanding and complex game activity for both genders, where players work intensely for short, intermittent time intervals, while repeatedly performing different fast and dynamic types of locomotion and technical match activities. The game imposes moderate-to-high demands on the intermittent endurance running capacity interspersed by frequent brief periods of high-intensity running. Thus, there seem to be moderate-to-high demands on player's aerobic system as evidenced, e.g. by a mean relative workload during match-play \sim 70–80% of VO₂-max, while also imposing substantial demands on anaerobic energy systems as, e.g. reflected by moderate-to-high post-match blood lactate values for male players. In addition, elite team handball match-play is also characterised by a high number and a great variety of short-term, high-intense technical playing actions. Substantial gender-specific differences in the physical demands in elite team handball were observed, with MP performing more high-intense, strength-related playing actions and high-intensity running than FP. Conversely, FP covered a greater total distance and demonstrated a higher relative workload than MP. The physical training of male and female elite team handball players should be designed to reflect these contrasting needs.

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