

FITNESS DIFFERENCES BETWEEN SOUTH AFRICAN NATIONAL AND ACADEMY FEMALE SOCCER PLAYERS



Shona L. Hendricks & James R. Clark
Institute for Sports Research, University of Pretoria, South Africa



AIMS OF THE STUDY

The purpose of the study was to assess whether differences in physical fitness exist between players in the South African national female football academy and the South African senior female football national squad

INTRODUCTION

Football is a complex sport, where many components contribute to soccer performance. Therefore in part, success in elite soccer depends on a soccer player's ability to cope with the physical demands of the sport so that their tactical and technical skills do not deteriorate as they fatigue during a match¹.

There are many physical components which are considered to be vital for the modern day soccer player, whether male or female^{2,3,4}.

When comparing elite and non-elite female soccer players, it has been reported that that elite level female soccer players are able to run 28% longer at a higher intensity than their non-elite counterparts, they are also able to sprint longer by 24%⁵.

Although many studies have shown similar physical characteristics of female soccer players to other female athletes, there is still a need for more literature in their field as opposed to utilising extensions of the current male literature⁶. Also there is a lack of literature and data for African players of the female game as most of the literature is based on European and/or American participants

METHODS

32 participants were tested

U17/20 National academy (n=16) (JNR)
Senior National Squad (n=16) (SNR)

Group	Age (yrs)	Body mass (kg)	Height (cm)	Bodyfat (%)
JNR (n=16)	16 ± 2	57.8 ± 8	160.1 ± 5.7	23.8 ± 3.8
SNR (n=16)	21 ± 3 *	57 ± 6.3	160.6 ± 4.0	21.1 ± 3.9

Values (means ± SD), South African U17/U20 female soccer academy (JNR), South African Women's Soccer Squad (SNR). Number of athletes in each group (n)
*Significantly different to JNR (P <0.05).

- Athletes were tested on
- Body Composition
 - Explosive Power
 - Acceleration & Speed
 - Endurance Capacity

Statistical Analysis

Descriptive statistics (mean ± SD) were calculated for both groups and *Mann-Whitney U Test* was used to compare the means of the groups for each test.

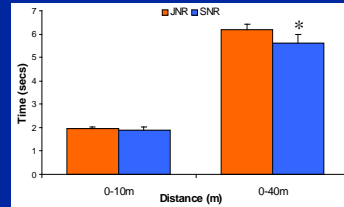


Figure 1- Mean acceleration and speed investigated during maximal sprint efforts over distances of 10m and 40m between Junior (JNR) and senior (SNR) female soccer players.

*Significantly different to JNR over 0-40m distance, $p = 0.03$.

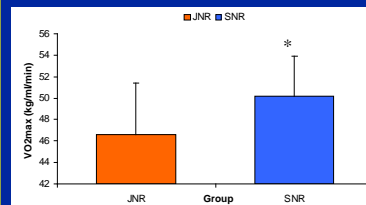


Figure 2- Mean predicted VO₂ Max determined from a 20m shuttle test between junior (JNR) and senior (SNR) female soccer players.

*Significantly different to JNR, $p < 0.05$.

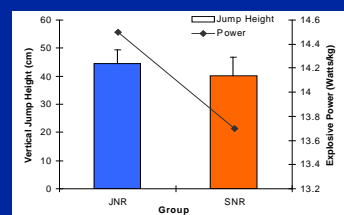


Figure 3- Mean vertical Jump height and mean explosive power of the lower extremity in both the Junior (JNR) and Senior (SNR) female soccer players

RESULTS

While academy players were significantly younger than the national senior players ($p < 0.01$), there were no significant differences between the groups in mass, stature or sum of seven skinfolds.

Significant differences between groups were found in running speed over 40m (6.20 sec for JNR compared to 5.96 sec versus for SNR; $p = 0.03$) [Figure 1] as well as endurance capacity (VO₂ max for JNR 46.5 ml/kg/min versus 50.2 ml/kg/min for SNR; $p < 0.05$) [Figure 2]

Explosive power [Fig 3] showed differences between groups but these were not significant (JNR 14.5 w/kg versus SNR 13.7 w/kg; $p > 0.05$)

DISCUSSION & CONCLUSION

Although there has been a rise in scientific studies on women's football as a result of increased interest in the female game, there are still many gaps within the literature. This is also very specific to the women's game in Africa as most players in Africa play recreationally and not professionally. Comparing fitness parameters of senior versus junior squads can allow for information that may be useful in exercise prescription, strength and conditioning as well as talent identification.

These results demonstrate that selected physical fitness components are generally better in senior (SNR) compared to youth academy (JNR) female football players in South Africa. While some of these differences can be explained by the age difference between the players, the results do have important implications for the conditioning of female football players

References:

- Clark, J. (2007). Positional assessment and physical fitness characteristics of male professional soccer players in South Africa. *African Journal for Physical Health Education, Recreation and Dance*, Vol 13, No 4, p: 453-464
- Stolen, T., Chamari, K., Castagna, C., Wisloff, U. (2005). Physiology of Soccer: An Update. *Sports Medicine*, Vol: 35, No 6, p: 501-536
- Mujika, I., Santalucia, J., Impellizzeri, F., Castagna, C. (2009). Fitness determinants of success in men's and women's football. *Journal of Sport Sciences*, Vol: 27, No 2, p: 107-114
- Scott, D., Druce, B. (2007). Work-rate analysis of elite female soccer players during match-play. *Journal of Sport Sciences and Medicine*, Supplement 10 p: 107-108
- Mohr, M., Krauss, P., Kinkeldey, D., Bangsbo, J. (2007). Differences in physical match performance at two levels in female soccer. *Journal of Sport Sciences and Medicine*, Supplement 10, p: 108.
- Polman, R., Walsh, D., Bloomfield, J., Neiss, M. (2004). Effective conditioning of female soccer players. *Journal of Sport Sciences*, Vol: 22 No 2, p: 191-203.