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## ANTHROPOMETRY, PHYSICAL AND MOTOR PERFORMANCE DETERMINANTS OF SPRINTING AND LONG JUMP IN 10-15 YEAR OLD GIRLS FROM DISADVANTAGED COMMUNITIES IN SOUTH AFRICA

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### ABSTRACT

The development of young athletes with talent for sprinting and long-jump can benefit from scientific talent identification (TID) programmes, but limited research exists pertaining to TID among young girl athletes and specifically those from disadvantaged communities. The aim of the study was to identify anthropometric, physical and motor variables important for performance in sprinting and long-jump in 10 to 15 year-old girls from disadvantaged communities. Seventy-four girls (N=74) between ages 10 and 15 years from two different farm schools were subjected to the Australian Talent Search Protocol (Australian Sports Commission, 1995) to identify general sports talent. It is an existing protocol that is used to identify general sports talent and consists of 10 test. The top 50% (n=37) who represented the most talented of the group were selected by rank ordering for further analysis by means of a sprinting and long-jump sport specific test battery (five anthropometric measurements and 28 physical and motor tests). Stepwise multiple regression analysis was then performed to determine the variables with the largest contribution to sprinting and long-jumping ability while effect sizes were used to establish the practical significance of the contribution of each variable. The results indicated that long-jump ( $R^2 = 0.64$ ), push-ups ( $R^2 = 0.68$ ), 7-level abdominal strength ( $R^2 = 0.72$ ), 0-5 metres speed ( $R^2 = 0.78$ ), ankle dorsiflexion ( $R^2 = 0.80$ ), stature ( $R^2 = 0.81$ ) and age ( $R^2 = 0.84$ ) contributed to 84% of the total variance in 100 metres sprinting. Seventy nine percent of the total variance in long-jump was explained by 0-100 metres speed ( $R^2 = 0.64$ ), stature ( $R^2 = 0.72$ ), 7-level abdominal strength ( $R^2 = 0.73$ ), push-ups ( $R^2 = 0.75$ ), ankle dorsiflexion ( $R^2 = 0.77$ ), standing long-jump ( $R^2 = 0.78$ ) and body mass ( $R^2 = 0.79$ ). The high contribution of the variables to the total variance in sprinting and long-jump respectively indicate that it can be used to enable coaches and sports scientists to further classify girls who display talent as sprinting and long-jump athletes, and then develop the potential of the athletes accordingly.

Key words: Talent identification, athletics, physical and motor fitness, anthropometry, disadvantaged communities.

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### INTRODUCTION

Talent identification (TID) in sport based on scientific principles is still relatively new in South Africa (Badenhorst & Pienaar, 2000), although talent identification through participation in competitive sports has already been used for a considerable period (Burgess, 2005). TID can be defined as the development of different selection procedures and tests which can be used to identify potential talent (Mero, Kauhanen, Peltola, Vuorimaa and Komi, 1990). The former East Block countries such as the German Democratic Republic, Soviet Union, Bulgaria and Romania are examples of countries which have already systematically been using talent identification programmes as early as the 1960s and 1970s (Bompa, 1999). The sporting success achieved by East Europe has led to the increased deployment of systematic TID processes worldwide (Abbott & Collins, 2002).