Position- Specific Anthropometric and Physical Fitness Characteristics of Forwards and Backs in Sri Lankan Army Rugby Players

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Rugby is a sport that is gaining prominence in Sri Lanka. Optimising physical fitness for specific playing positions is crucial for training elite players. Yet the lack of Sri Lankan research data hinders the development of evidence-based, position-specific training. This study assessed and compared anthropometric and physical fitness parameters between forwards and backs in a Sri Lankan league rugby team. Retrospective data was collected and analysed from 33 male professional army rugby players (age 27.58±4.80 years), categorised as forwards (n=22) and backs (n=11), who underwent fitness testing at the Sports and Exercise Laboratory, Faculty of Medicine, University of Peradeniya. Tests included anthropometry, body fat percentage via bioelectrical impedance analysis (BIA) and skinfold thickness, VO_2 max (Åstrand ergometer), left and right grip strength (handgrip dynamometry), shoulder push and pull strength, back and hamstring muscle strength (dynamometry), vertical jump, and flexibility (sit-and-reach). Independent t-tests, Mann-Whitney U, and Spearman correlations were used (Significance $p<0.05$). Compared to backs, forwards had significantly higher weight (82.96±11.89 vs. 70.48±6.73 kg, $p=0.003$), BMI (28.17±3.27 vs. 24.13±1.61 kgm^{-2}, $p=0.001$), skinfold fat percentage (16.37±3.17 vs. 13.03±3.07% kgm^{-2}, $p=0.015$), upper body fat (24.71±4.89 vs. 20.45±4.02%, $p=0.018$) and lower body fat (22.91±5.27 vs. 17.95±3.67%, $p=0.009$). In strength, forwards had significantly greater back strength (127.41±16.5 vs. 113.18±15.85 kg, $p=0.025$) compared to backs, but no significant differences were observed in grip strength, shoulder push and pull, or hamstring strength. Backs had significantly higher VO_2 max (46.94±7.90 vs. 39.09±9.25 ml/kg/min, $p=0.004$). No significant differences were found in players' height, flexibility or vertical jump ($p>0.05$). In both backs and forwards, VO_2 max negatively correlated with upper body fat ($r=-0.54$, $p=0.001$), lower body fat ($r=-0.61$, $p<0.001$), skinfold fat percentage ($r=-0.60$, $p<0.001$) and resting pulse rate ($r=-0.47$, $p=0.005$). Back strength positively correlated with hamstring strength ($r=0.75$, $p<0.001$). These results indicate forwards possess greater body mass, fat, and upper-body-pulling strength, reflecting greater physical demands (e.g., scrum and ruck) placed on them. Backs are leaner and have higher VO_2 max, which reflects the endurance demands of backline play. This study provides a baseline for position-specific training, player recruitment, in Sri Lankan male rugby players and a platform for future research activities.

Keywords: rugby training, positional differences, performance analysis, Sri Lanka