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Relationship of Body Composition Variables and Performance Outcomes in Male Professional Soccer Players

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Competitive environments in professional sports triggered the emergence and transformation of performance analysis. Body composition is acknowledged as a health-related component of athlete fitness that may relate to performance; however, its relationship in professional soccer players has not been elucidated. **PURPOSE:** Explore relationships between body composition and performance outcomes in male professional soccer players. **METHODS:** Nineteen professional male soccer players were assessed for body composition (lean mass, tissue mass, fat mass, fat-free mass, body fat percentage [%], and total mass) via dual-energy x-ray absorptiometry. Performance outcomes (total distance, high speed running, sprint distance, and mechanical loading) were measured for 10 weeks via GPS tracking. Multivariate regressions elucidated which body composition variables predicted performance outcomes with alphas set to $p < .05$. **RESULTS:** Total distance positively correlated with lean mass arms difference ($p = .05$), right tissue trunk mass ($p = 0.04$), android tissue mass ($p = 0.04$), and android total mass ($p = 0.04$), and negatively correlated with arm region difference in fat % ($p = 0.02$). Sprint distance positively correlated with legs difference fat mass ($p = 0.02$) and negatively correlated with legs region fat % ($p = 0.03$), left leg region fat % ($p = 0.03$), legs tissue fat % ($p = 0.03$), and left leg tissue fat % ($p = 0.03$). Total distance was linearly, positively predicted from total bone mass ($p = 0.004$), and negatively predicted from total body less head (TBLH) bone mass ($p = 0.005$), arms difference region fat % ($p = 0.03$), and arms difference tissue fat % ($p = 0.02$). Sprint distance was strongly, positively predicted from legs mass fat difference ($p = 0.02$), total fat regional difference ($p = 0.01$), TBLH fat regional % ($p = 0.01$), and negatively predicted from total right region fat % ($p = 0.01$). No relationships were predicted between high-speed running and mechanical load and body composition parameters. **CONCLUSION:** Body composition related with total and sprint distance. Sports performance experts monitoring and managing player workloads may consider these relationships when making decisions on how to support athletes in optimizing their physical abilities in sport.