


# A Cluster Analysis of Identifying Team and Individual Sports Athlete Based on Anthropometric, Health and Skill Related Components



Noor Aishah Kamarudin, Mohamad Razali Abdullah, Vijayamurugan Eswaramoorthi, Ahmad Bisyril Husin Musawi Maliki, Aina Munirah Ab Rasid, Anwar P. P. Abdul Majeed, Mohd Azraai Mohd Razman, and Rabiul Muazu Musa 

**Abstract** The purpose of this study is to identify the essential fitness attributes in an individual sport and team sport. A total number of 218 male competitive youth athletes aged 13 to 21 years old were examined anthropometric, health and skill-related performance parameters (PP). Anthropometric parameters namely, weight, height, sitting height, and arm span were tested while the health-related parameters consisting of sit and reach, 1 min sit up, push up, handgrip, predicted  $VO_{2max}$ , and medicine ball throw were also collected. The 20 m speed, vertical jump, standing wide jump, stork stand test, and t-test represented the skill-related component tests. Based on the three components, hierarchical agglomerative cluster analysis (HACA) was utilized to group the athlete concerning their similarities in the PP examined. The athletes' performance within the clusters differs in three areas: age and arm span are significant in individual sports while height, weight, and sitting height are vital for team sports. Muscle endurance is shown to be essential in individual sports. Meanwhile, vertical jump and 20 m speed are more attributed to individual sports while standing broad jump, stork stand test, and t-test are more inclined to

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N. A. Kamarudin · V. Eswaramoorthi  
Faculty of Health Sciences, Universiti Sultan Zainal Abidin, 21300 Kuala Nerus, Terengganu, Malaysia

M. R. Abdullah  
East Coast Environmental Research Institute, Universiti Sultan Zainal Abidin, 21300 Kuala Nerus, Terengganu, Malaysia

A. B. H. M. Maliki  
Academy of Defence Fitness, National Defence University of Malaysia, Kem Sungai Besi, 57000 Kuala Lumpur, Malaysia

A. M. Ab Rasid · R. M. Musa (✉)  
Centre for Fundamental and Continuing Education, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia  
e-mail: [rabiul.muazu@umt.edu.my](mailto:rabiul.muazu@umt.edu.my)

A. P. P. A. Majeed · M. A. M. Razman  
Innovative Manufacturing, Mechatronics and Sports Laboratory, Universiti Malaysia Pahang, 26600 Pekan, Pahang Darul Makmur, Malaysia