



Dr. Govindasamy Balasekaran
Associate Professor
Physical Education and Sports Science
National Institute of Education
Sports Science and Management
Nanyang Technological University,
Singapore
Fellow of American College of Sports Medicine
Health/Fitness Director American College of Sports Medicine
Email: govindasamy.b@nie.edu.sg

Dr. G. Balasekaran obtained his doctorate from the University of Pittsburgh and he did his Post-Doctoral Fellowship in molecular genetics at the University of Pittsburgh with a renowned genetics professor. He has taught Physical Education in Singapore schools for a number of years. At present he is an Associate Professor and his research projects include physiological responses in exercise and adaptations to health and sports performance, also investigating the influence of genetic factors on exercise related outcomes. He is currently actively involved in investigating perceptual responses during exercise, physical activity in school children and the physiological predictors of human performance. He has been an author of a number of original scientific articles published in peer reviewed journals and has presented internationally around Asia and the USA.

As a keen runner and a former national competitor, Dr. Bala had represented Singapore in long distance running events and had won medals in various international and local meets. He had also qualified and raced in the prestigious National Collegiate Athletic Association (NCAA) cross-country championships in USA. He is a Fellow of the American College of Sports Medicine (FACSM) which is the most prestigious distinction within the college and is a certified American College of Sports Medicine (ACSM) Health/Fitness Director. Dr. Bala is also a Fédération Internationale D'Éducation Physique (FIEP Europe) assistant national delegate for Singapore. He has also a strong interest in coaching and holds the level one and level two International Amateur Athletic Federation (IAAF) coaching certificates.

Title of abstract: Comparison of Adolescents' Fitness in Eight Asian Countries

Authors: Govindasamy Balasekaran¹, Stanley Sai-Chuen Hui², Koya Suzuki³, Hishashi Naito³, Jong Kook Song⁴, Yiing Mei Liou⁵, Dajiang Lu⁶, Bee Koon Poh⁷, Kallaya Kijboonchoo⁸, Visvasuresh Victor Govindaswamy⁹, Peggy Boey¹ and Ng Yew Cheo¹

¹Physical Education and Sports Science, National Institute of Education, Nanyang Technological University, Singapore, ²The Chinese University of Hong Kong, Shatin, Hong Kong, ³Juntendo University, Japan, ⁴Kyung Hee University, Korea, ⁵National Yang-Ming University, Taipei, ⁶Shanghai University of Sport, ⁷The National University of Malaysia, ⁸Mahidol University, Thailand, ⁹Concordia University Chicago, Illinois, United States.

Abstract:

Purpose: The purpose of this study was to compare health-related fitness variables among adolescents between Asian countries. **Methods:** A total of 12,108 participants (age: 13.63±1.01 years, height: 159.97±8.55 cm, weight: 52.94±12.70 kg, BMI: 20.55±3.98 kg/m², BF%: 22.33±10.00 %, PACER: 40.00±21.34 laps) from 8 Asian countries took part in this international study. Anthropometric measurements and body composition were taken and analyzed – Body Mass Index (BMI, kg/m²) and body fat percentage (BF%). Participants completed the Progressive Aerobic Cardiovascular Endurance Run (PACER) test, Sit-and-reach test (SRT), Handgrip Strength (HS) test and Sit-up test (SUT) that assessed their cardiovascular fitness (CF), flexibility and muscular strength. **Results:** Using Independent T-Test to compare BMI, BF% and PACER with Singapore to other Asian countries, Singapore had significantly higher CF compared to 4 other Asian countries (Bangkok, Hong Kong, Malaysia and Taiwan) (p=0.00) and is ranked behind Japan (p=0.00). There were no significant differences for PACER between Singapore and Korea (p=0.36), Singapore and Shanghai (p=0.26). Significant correlations were found between all countries' BMI and BF% (r=0.80), significant negative correlation between all countries' BMI and PACER (r=-0.22) and BF% and PACER (r=-0.45). **Conclusion:** To conclude, BF% and BMI are interrelated and could improve or hinder CF in adolescents. In general, the Asian adolescents in this study are aerobically fit, with a healthy BF%, indicating low obesity rates. It is important for them to continue their regular participation in physical activity to maintain their CF to reduce the risk of cardiovascular diseases in the future.

Keywords: fitness index, cardiovascular fitness, flexibility, muscular strength, adolescents