

**Performance of National and
International Level Sports Personnel
and its association with Physical and
Physiological Characteristics, and
Nutritional Aspects**

by

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Personnel and its association with Physical and
Physiological Characteristics, and Nutritional Aspects.

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Medical Science on 30-12-2011.

I certify that the candidate has incorporated all corrections,
amendments and additions recommended by the examiners.



Dr .Sudharshani Wasalathanthiri

Declaration

The work described in this thesis was carried out by me under the supervision of Dr.P.T.R.Makuloluwa and Dr.Sudharshani Wasalathanthiri and a report on this has not been submitted in whole or in part to any university or any other institution for another Degree/Diploma.

Date 24.12.2012.

v. Sang.
Signature

We certify that the above statement made by the candidate
is true and that this thesis is suitable for submission to the
University for the purpose of evaluation.

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Dedicated to my parents, my husband Ajith,

daughter Ysasvi and son Yenul

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ABSTRACT

Important test components for fitness evaluation include assessment of physical and physiological characteristics which determine the physical performance capacity and metabolic efficiency of sports personnel. Optimum nutrition is also an important factor for good sports performance. The purpose of this study was to describe the anthropometric measurements (weight, height, BMI, fat percentage), physiological parameters (resting heart rate, maximum heart rate, systolic blood pressure, diastolic blood pressure, VO₂max), physical characteristics (strength, power, flexibility, endurance) and nutritional status of national and international level Sri Lankan short distance athletes, swimmers and volleyball players. The parameters were measured in two training seasons i.e. non-competitive and competitive seasons targeting the 10th South Asian Federation games held in Sri Lanka. The sample included 36 short distance athletes, 38 swimmers and 48 volleyball players. Anthropometric characteristics were determined using standard test procedures. Physiological characteristics were determined using K4b² specific software developed by Cosmed Srl-Italy. Physical characteristics were determined

by procedures specific to each parameter. Anthropometric characteristics of sports personnel studied appeared to be satisfactory. When anthropometric characteristics were compared between the three groups of sports personnel studied, the volleyball players were taller and had a higher percentage of body fat when compared to short distance athletes and swimmers. VO_2 max levels of athletes showed significant improvement with training. The VO_2 max was highest in short distance athletes when compared to swimmers and volleyball players. The highest strength was recorded in short distance athletes, highest power and flexibility in volleyball players and a very low endurance level in swimmers. The mean sports performance of sports personnel engaged in individual sports (short distance athletics and swimming) was significantly higher ($P < 0.001$) in the non-competitive season when compared to the competitive season. Pearson correlation coefficients (r) calculated to determine the relationship between the performance and each of the physiological variables tested showed a significant correlation between VO_2 max and performance ($r = 0.65$; $p < 0.05$) in international level short distance athletes in the non-competitive season. In the competitive season, a significant correlation was seen between maximum heart rate and performance ($r = 0.48$; $P < 0.05$) only in national level players. Among the physical characteristics, there was a highly significant correlation between the power and performance ($r = 0.81$; $P < 0.001$) and a significant correlation between endurance and performance ($r = 0.52$; $P < 0.05$) in the non-competitive season in national level short distance athletes. Nutritional analysis showed that calorie, protein and micronutrient intake was not satisfactory in all sports personnel both in competitive and noncompetitive seasons.