# *SUMMARY*

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This study was designed to determine some of the physical fitness parameters among Egyptian athletes. The aim of the work was to construct normal standard nomogram for physical fitness levels and maximal aerobic capacity.

Eighty four players at age ranging from 19 to 25 years belonging to the national teams of Football (19 players), Handball (21 players), Volleyball (12 players), Rowing (16 players) and Taikondo (16 players) were included in the study.

They were all subjected to clinical examination before performing the tests of physical fitness. The variables used in this study were pulmonary function tests, oxygen consumption per minute till the $Vo_{2\,max}$, resting heart rate, and changes of heart rate during exercise test up to the maximum and also the post exercise changes at the period of recovery. Some anthropometric measures such as height and weight were recorded.

Statistical analysis was made giving differences in levels of fitness between the teams. Correlations were made

between the values of different variables resulting in the equation for predictive value of $Vo_{2\,max}$.

The pulmonary function tests by using the vitalograph do not indicate significant variations or correlation to predict the $Vo_{2\,max}$ among all studied groups.

The resting pulse was lower in the Football team while the others showed normal values like that of sedentary people. However, the changes of heart rate with increasing loads showed that Football players had rapid increase and higher levels of heart rate against a certain load with disability to continue the test.

This is explained by one of two causes due to either doing the test for Football team in the off-season time, or that the bicycle ergometer is not suitable for them. The recovery pulse rates were recorded and it was found to be significantly correlated to predict the $Vo_{2\,max}$ (maximal aerobic capacity). The values of $Vo_{2\,max}$ were recorded by using the ergooxyscreen. The Rowing team has the highest value according to the expected by using the cycle ergometer. The Football team has a high value of $Vo_{2\,max}$ but with shorter examination time against a lower load. The examination time

was found to be correlated statistically in the prediction of $Vo_{2\,max}$. The players were subjected to the anthropometric measurements for weight an height which revealed large built players for Handball, Volleyball and Rowing which match the trends for choosing players for such sports. The Football and Taikondo players had the lowest values. It is not necessary for football players to be of large built as certain skill may compensate for that. The Taikondo players, as other wrestlers are chosen for different competitive weights and in this study, the range from 54 to 89 kg was used.

The results of different recorded variables revealed that Volleyball team and Handball team had the highest levels of fitness unlike Taikondo and Football teams. Surprisingly, these results match with the end result of the Egyptian teams in the 5th All Africa Games (Cairo, 1991).

Lastly, statistical analysis and correlations were made resulting in construction of the predictive equation for $Vo_{2\,max}$ for those players.

The prediction equation was found to be as follows :

$$Vo_{2\,max} = 2.44 + [-0.016 \times \text{Resting pulse}] + [0.017 \times \text{Rec1}] + [-0.006 \times \text{Rec3}] + [0.026 \times \text{Exam time}].$$