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Winter 8-1-2017

**“A comparative study on academic performance, anthropometric measurements, cognitive development, reaction time and self-defence mechanism among Karate and non-Karate performers of selected schools in Udupi district, Karnataka”.**

JILU SALY JOSE

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## "ABSTRACT

A research study titled "A comparative study on academic performance, anthropometric measurements, cognitive development, reaction time and self-defence mechanism among karate and non-karate performers of selected schools in Udupi district, Karnataka." was conducted by Ms Jilu Saly Jose in partial fulfilment of the requirement for the degree of Masters of Science in Nursing at Manipal College of Nursing Manipal, Manipal University, Karnataka.

The objectives of the study were to identify the academic performance of karate and non-karate performers, assess the anthropometric measurements of karate and non-karate performers and compare with the standard measurement, elicit the reaction time of karate performers and non-karate performers, find the self defence mechanism of karate performers and non-karate performers, assess the cognitive development of karate and non-karate performers and compare the anthropometric measurements, academic performance cognitive development and self-defence mechanism of karate and non- karate performers.

Conceptual model of the study was based on conceptual frame work of Kohl & Cook, (2013) which showed the relationship between physical activity, physical fitness, health and the academic performance. A quantitative approach with a comparative survey design was adopted for the study.

The data collection instruments used for the study were demographic proforma, marks card grade, anthropometric proforma, Montreal cognitive assessment test, reaction time test and self-defence questionnaire.

Content validity was established by giving the tools to seven experts and modified according to their suggestions. The pretesting was done among four karate performers and four non-karate performers of Udupi district. Reliability was done among twenty karate and non-karate performers of Udupi district. English medium schools of Udupi district where karate performers and non - karate performers are present were taken as the research setting. Convenient sampling technique was used for the selection of schools and a quota sampling was used to select the samples. The samples of the study were the karate performers and non- karate performers between the age of nine to twelve years from the classes fourth, fifth, sixth and seventh. Pilot study was conducted among sixteen karate performers and sixteen non – karate performers in the first week of January 2017 after obtaining the administrative permission from the principal and the study design was found to be feasible for the main study.

Descriptive and inferential statistics were used for the analysis of data. Data was analysed using SPSS version 16.0 package. The major findings of the study were that majority of the karate performers 152(76%) and non-karate performers 153(76.5%) were males. Majority of the karate performers 75(37.5%) were having yellow belt. Karate performers ( $83 \pm 12.93$ ) as well as non- karate performers ( $84 \pm 12.62$ ) were having high marks in the subject English. Majority of the karate performers 99 (49.5%) as well as the non-karate performers 97(48.5%) were in the category good in the subject maths. Most of the karate performers 95(47.5%) and non-karate performers 114(57%) were belonging to the excellent category in the subject science. In the total academic performance of the karate performers 95(47.5%) and non-karate performers 102(51%), majority were performing excellent

in the studies. No significant difference was found in the academic performance of karate performers and non-karate performers.

There was no much difference found in the mean height of karate performers ( $141 \pm 9.59$  cm) and non-karate performers ( $142 \pm 8.42$  cm). A significant difference was found in the anthropometric measurements i.e., weight ( $p = .04$ ), mid-arm circumference ( $p = .01$ ) and BMI ( $p = .02$ ) of the karate performers and non- karate performers. Among the two hundred non-karate performers 21.5% (43) were found to be overweight, and 6.5% (13) were obese, when only 13.5% (27), and 4.5% (9) of the karate performers were overweight and obese respectively. There was no any significant association found between the BMI and practice of karate ( $\chi^2(3) = 6.325, p = .09$ ).

Sixty five percentage of karate performers were coming under, normal category in the MoCA test whereas only 48.5% of the non- karate performers were coming under normal category. That is karate performers has a better cognitive development comparing to the non-karate performers. Also a statistically significant difference was found in the cognitive development of karate performers and non- karate performers ( $Z = 3.175, p = .001$ ).

Statistically significant difference was present in the visual reaction time ( $p =$

$.005$ ) and auditory reaction time ( $p = .002$ ) of karate performers and non- karate. Statistically significant difference was found in the self defence mechanism of karate performers and non – karate performers ( $p \leq .001$ ).

In addition the study found out that there was no statistically significant association between the self defence mechanism and age ( $\chi^2(6) = 6.5, p = .36$ ) and statistically significant

association was found between the karate training and self defence mechanism ( $\chi^2(4) = 100.7, p \leq .001$ ). Significant association was also found between the self defence mechanism and duration of karate training ( $\chi^2(4) = 102.4, p \leq .001$ ). Statistically significant association was found between the self defence mechanism and gender ( $\chi^2(2) = 8.81, p = .012$ ).

The study concluded that karate has a positive effect in the children's anthropometric measurements i.e. weight, mid arm circumference and BMI, cognitive development, reaction time and self-defence mechanism. Karate improves the children's overall physical fitness and it also improves the cognitive functioning in terms of attention, memory, visuo-constructional skills, and naming, the reaction time of the child to a visual as well as auditory stimuli and the self defence mechanism of the students. Based on the findings of the present study, the following recommendations have been made:

- A similar study can be replicated on a larger sample.
- A case control study can be conducted by taking the karate performers as cases and non-karate performers as controls.
- An interventional study can be done to find the benefits of karate training.
- A similar study can be done in a different age group.

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