

## Anger in Adolescent Boy Athletes: a Comparison among Judo, Karate, Swimming and Non Athletes

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### Abstract

**Objective:** Karate and judo are originally Japanese martial arts which may have different influences on adolescents' behavior. This study was conducted to examine the total anger rate and its subscale-reactive anger, instrumental anger, and anger control-rates in young karateka and judoka.

**Methods:** A cross-sectional study was carried out in 11 to 19-year old boys. Adolescents included in the study were judoka (n=70), karateka (n=66), swimmers (n=59), and non athletes (n=96). One stage cluster sampling method was used to select judoka, karateka, and swimmers from sport clubs in Tehran. Students of governmental schools at the same area were chosen as the non-athletes group. The "Adolescent Anger Rating Scale" questionnaire was utilized to assess the anger rate.

**Findings:** The mean age of participants was 12.90(±2.06) years. The total anger rates were 45.40 (±5.61) in judoka, 41.53(±5.63) in karateka, 41.19(±5.33) in swimmers, and 45.44 (±8.58) in non athletes. In total anger scale karateka and swimmers had a significantly lower score compared to judoka and non athletes. In instrumental anger subscale the difference was significant just between karateka and non athletes. In reactive anger subscale judoka showed higher scores than swimmers. In anger control subscale the difference was significant between judoka and swimmers and also judoka and karateka. The difference of anger control between karateka and non athletes was significant.

**Conclusion:** The findings of this study propose a difference in the anger rate between judoka and karateka. In contrary to the results of previous studies, judo training may have no influence on anger control, while karate training could be beneficial.

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**Key Words:** Aggression; Anger; Adolescent; Judo; Karate

### Introduction

Children and adolescents become familiar with martial arts through entertainment media [1].

Karate and judo are originally Japanese martial arts practiced without any kind of traditional weapons [2]. Karate is classified as a striking art while judo is known as a grappling or throwing

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art<sup>[1]</sup>. Although judo is an Olympic sport, it did not experience the significant increase in the number of participants which was evident in karate in the last decade <sup>[3]</sup>.

From the injury point of view, some type of karate (such as Shotokan) can be considered relatively safe for adolescent and young females <sup>[4,5]</sup>. However, more investigation should be performed for safety evaluation from other point such as behavior. The degree of contact allowed during a kumite (or combat) competition in karate, is somewhere between skin touch and 5 centimeters from the face, head or neck in kicks and punches and a higher degree of contact of the body <sup>[6]</sup>. In judo almost all techniques have a contact nature. Therefore, both karate and judo could be classified as contact sports. In spite of earlier studies, the relationship between different kinds of martial arts and aggression is not clear.

Aggression stems from the Latin word of "aggressio" which means attack <sup>[7]</sup>. Aggression is defined as "a forceful, goal-directed action that may be verbal or physical, and is the motor counterpart of the affect of rage, anger, or hostility" <sup>[8]</sup>.

Although participation in sports has many positive aspects, championship tournaments are usually accompanied by aggressive behavior <sup>[7]</sup>. There are two types of aggression: hostile and instrumental. The goal of hostile or reactive aggression, which is motivated by anger, is to cause physical or psychological harm to another. The goal of instrumental aggression is beyond the infliction of an injury on the other player, and the awareness or intention to harm is incidental <sup>[7,9,10]</sup>.

Earlier studies of aggression in athletes found that athletes in high contact sports, e.g. judoka, or wrestlers were more aggressive both in the sport and in daily life than athletes who participate in low or medium contact sports <sup>[11]</sup>. They also found that in martial arts the level of aggression decreased with the duration of practice in the sport <sup>[12,13]</sup>. In spite of some researchers' theory about using martial arts as a way of acquisition of emotional and behavioral self-control <sup>[12,13]</sup>, other studies have shown that karate or judo training does not decrease aggression <sup>[14,15]</sup>. The number of researches in the field of aggression of young martial art athletes is limited. In many of these studies there have been methodological problems, especially in data collection tools <sup>[9]</sup> or small

sample size <sup>[14,15]</sup>. They compared adolescents participating in martial arts with non athletes, but not with athletes of other sports. Therefore, it was not clear that differences in anger scores were related to the specific kind of exercise, i.e. martial arts <sup>[9]</sup>. In the present study the control group of swimmers is added. There may also be a transition from traditional to modern methods of martial arts training with less emphasis on kata or meditation which can have an influence on the relationship between aggression and martial arts practice. Therefore, this study was aimed to assess the total anger rate and its subscale-reactive anger, instrumental anger, anger control-rates among adolescent male athletes of karate and judo, and compare those with control group.

## Subjects and Methods

A cross sectional study was conducted in 11 to 19-year-old athletes of karate and judo in Tehran, Iran in 2008. The first part of the result of this study on girls and the detailed methodology will be published soon <sup>[16]</sup>; herein we report the second part of findings on the boys. The participants were selected by one stage cluster sampling from all registered sport clubs of Tehran. The clubs were selected randomly from all registered karate and judo clubs in which modern style of martial arts was taught. All members of the selected clubs were included if they had a weekly, regular sport activity (judo or karate). Adolescent swimmer athletes and non-athlete teenagers of public schools in the same age were considered as the control group.

Parental permission and adolescents assent were obtained. In case of lack of individual consent the subject was excluded. The questionnaire was completed by adolescent himself. All of the questions in the part of questionnaire which assessed anger should be answered to be included. In the part of demographic data, if a participant answered less than 75% of questions of his questionnaire that individual was excluded from the study.

To assess anger level The Adolescent Anger Rating Scale (AARS) questionnaire was employed.

In AARS instrumental anger, reactive anger, and anger control were evaluated. Instrumental anger is defined as “a negative emotion that triggers a delayed response resulting in a desired and planned goal of revenge and/or retaliation“. Instrumental anger scores range was 20–80. Reactive anger was “an immediate angry response to a perceived negative, threatening, or fear provoking event“. Reactive anger scores range was 8–32. Total anger scores range was 41-164. Higher instrumental, reactive or total anger scores reflect greater endorsements of instrumental, reactive or total anger. Anger control was defined as “a proactive cognitive-behavioral method used to respond to reactive and/or instrumental provocations “. Anger control scores range was 13-52, and higher scores reflect greater endorsements of anger control [15].

Demographic data of participants (including birth year, class, number of brothers and sisters, number of friends, times expelled from school, friends' behavior, playing another sport) was obtained after completion of the questionnaire. In athletes group the number of years of playing sport, the number of hours of training a week, and the manner of practicing (through the year, in summer, or sometimes) were asked. The Research Ethics Committee of Tehran University of Medical Sciences approved the study.

SPSS software (version 13) was used for data analysis. Means and standard deviations were calculated for age, number of brothers and sisters, and the score of each anger subscale. For comparison of quantitative variables, including anger score, a one-way analysis of variance (ANOVA), and for categorical variables the Chi-square or the Fisher Exact tests were employed. The probability of effect of the number of years of playing sport, the number of hours of training a week was analyzed by multiple regression

analysis. Bonferroni correction for multiple comparisons was employed. *P*-values of less than 0.05 were statistically significant.

## Findings

From the total of 205 questionnaires collected, four individuals were excluded due to incomplete answering the questionnaire. Therefore, 201 questionnaires were analyzed. Mean (SD) age of all participants was 12.9 (2.1) years. Mean age of the swimmers was less than other groups. Median (interquartile range) number of brothers and sisters of the participants was 1(1). Median (interquartile range) of number of friends was 4(0). 66.7%, 30.8% and 1.5% reported their friends' behavior as good, acceptable, and bad, respectively. There was no significant difference among the groups. Demographic data of the participants and their sportive past records are shown in Table 1. Time expelled from school was significantly higher in the judoka than in other trainers ( $P=0.03$ ).

Raw scores for each anger subscales were converted to T scores by tables available in “Adolescent anger rating scale professional manual[17]“. Mean (SD) total anger rate was higher in the non athletes 45.44 (8.58), and judoka 45.40 (5.61), but lower in the swimmers 41.19 (5.33), and karateka 41.53 (5.63). This rate showed a significant difference between groups ( $P<0.001$ ).

Table 2 shows the average score of adolescents' anger scale and subscales in participants of different groups. As shown, all subscales, including instrumental and reactive anger and anger control had also significant differences among the groups.

**Table 1:** Demographic data of participants in the study by the type of sport

| Sport              | Age (year)   | Experience in sport activity (year) | Training a week (hour) |
|--------------------|--------------|-------------------------------------|------------------------|
|                    | Mean (SD)    | Mean (SD)                           | Mean (SD)              |
| Judo (n=70)        | 14.66 (2.23) | 1.95(1.47)*                         | 6.98(3.02)             |
| Karate (n=66)      | 12.75 (2.30) | 4.42(2.53)                          | 4.23(2.71)             |
| Swimming (n=59)    | 11.94 (1.43) | 5.19(2.31)                          | 6.08(3.75)             |
| Non-athlete (n=96) | 12.40 (0.99) | --                                  | --                     |

SD: standard deviation

**Table 2:** Total anger scale and anger subscales in (T scores) by the type of sport

| Sport       | Instrumental anger | Reactive anger | Anger control | Total anger  |
|-------------|--------------------|----------------|---------------|--------------|
|             | Mean (SD)          | Mean (SD)      | Mean (SD)     | Mean (SD)    |
| Judo        | 46.51 (5.48)       | 48.21 (6.35)   | 55.30 (6.70)  | 45.40 (5.61) |
| Karate      | 44.82 (4.33)       | 46.24 (6.53)   | 60.02 (8.45)  | 41.53 (5.63) |
| Swimming    | 44.92 (5.58)       | 43.46 (8.07)   | 59.65 (7.41)  | 41.19 (5.33) |
| Non-athlete | 48.52 (9.53)       | 46.91 (8.04)   | 55.30 (7.44)  | 45.44 (8.58) |
| P value     | 0.01               | 0.01           | 0.001         | <0.001       |

SD: standard deviation

The post hoc tests showed that total anger score in the swimmers was significantly lower than in the judoka ( $P=0.008$ ), and also non-athletes group ( $P=0.005$ ). Total anger score in the karateka ( $P=0.02$ ), and also non-athletes group ( $P=0.01$ ). The post hoc test demonstrated instrumental anger score significantly higher in non-athletes than in swimmers ( $P=0.03$ ), and karateka ( $P=0.03$ )

In reactive anger subscale, the difference was significant just between the judoka and swimmers ( $P=0.02$ ). In anger control subscale, the difference was significant between the judoka and swimmers ( $P=0.03$ ) and also between the non-athletes and swimmers ( $P=0.02$ ). The difference of anger control subscale was significant between the judoka and karateka ( $P=0.01$ ) and also between the non-athletes and karateka ( $P=0.009$ ).

Number of years playing sport, or number of hours training a week did not have a confounding effect on results of the study.

## Discussion

The aim of this cross-sectional study was to assess anger rate in male adolescent martial art athletes and to compare it to that of non-athletes and athletes of other sports.

Athletes usually show aggressive behavior because the opponent has annoyed them or someone else has committed aggression against them. The other cause could be a tough, ego-centered athlete who has a low level of moral development. Athletes may be under group pressure to be aggressive or may learn it as a part of their role [10,18].

Although aggression has become a popular behavior in sports, it is traditionally believed that martial arts have the potential to control aggression.

The results of this study showed that the rate of anger among judoka was higher than in other athletes. In Reynes and Lorant study, total anger score in 8-year-old boys, beginning judo training, was higher than in their peers. The study proposed the possibility of difference in aggression among different types of martial arts [11]. In the one-year follow-up it was shown that judoka had significantly higher scores on total aggression, verbal aggression, and anger than the control group, indicating that differences were not based on differences among initial anger scores [14]. After a 2-year follow-up, they reported that judo training seemed to have a negative effect on anger scores [15].

In the present study, the total anger scores in judoka was higher than in other groups, the difference of which was significant in comparison to the swimmers and karateka. In comparison of the subscales, judoka got significantly lower scores of anger control than the swimmers and karateka. Their reactive anger score was significantly higher than that of the swimmers.

In this study a significant lower total anger score was found in karateka than non-athletes. Murray in a study of 661 students who participated in a broad range of physical activities, reported significantly higher aggression scores in students who participated in aggressive sports, including karate [19]. But Reynes and Lorant reported the absence of significant difference at the beginning of karate training, in aggression scores of 8-year-old boys than their peers [11]. No significant change was recorded in aggression scores after 1 and 2 year karate training [15,20]. A

significant difference of total anger scores was found between karateka and judoka in the present study. Karateka had a significantly lower scores of instrumental anger and higher scores of anger control, compared to non-athletes group.

The results of this study is in accordance with the findings of our study on girls in which the adolescents anger score was higher in judoka than karateka. Although the difference in total anger was not significant between girls who train judo and karate, the data in male athletes signifies the difference between these two styles of martial arts [16].

In our study the mean age of swimmers was less than that of other groups, which is due to paying more attention to this sport at the younger ages. According to this and due to the possibility of indirect effect of psychological characteristics of puberty, the anger scores were adjusted for age by the T score tables available in the manual of the questionnaire.

Data presented support the hypothesis that there are differences among different kinds of martial arts in acquisition of anger-control.

Several socioeconomic variables influence aggression. According to Statistical Center of Iran data there is a correlation between the family size and the socioeconomic status of families. As the size of the family increases, the socioeconomic status becomes worse. We tried to match the socioeconomic status of the groups by matching their family size. Martial art clubs were selected randomly from different areas of the city, and data of the control groups was collected from the nearby schools. However, there are other social and cultural factors which may affect anger or aggression, and are not considered in the present study.

As this was a cross-sectional study, achieving a definite conclusion is impossible and long-term follow-up studies with appropriate sample size are recommended.

## Conclusion

The findings of this study show differences in the anger rate between adolescents who train judo

and karate. Judo training may have no influence on anger control, as judo athletes demonstrate anger scores comparable with non athletes. On the other hand, karate and swimming are correlated with lower anger.

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**Conflict of Interest:** None

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