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Authors

Fujimoto, Jeffrey T.

Yannetsos, Christina

Vigil, Daniel V.

et al.

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ORIGINAL RESEARCH

Sport Specialization and Elite Athletic Performance: Is There a Link in American Judo?

Jeffrey T. Fujimoto, MD, MBA^{1,2}, Christina Yannetsos, MD³, Daniel V. Vigil, MD⁴, and Dena Florczyk, MD⁵

¹ David Geffen School of Medicine at UCLA, UCLA Department of Medicine, University of California, Los Angeles

² Cedars-Sinai Kerlan-Jobe Orthopedic Institute, Los Angeles, California

³ UCHealth University of Colorado Hospital, Department of Emergency Medicine, University of Colorado Anschutz Medical Campus, Aurora

⁴ David Geffen School of Medicine at UCLA, Department of Family Medicine, Division of Sports Medicine, University of California, Los Angeles

⁵ UCLA Arthur Ashe Student Health and Wellness Center, UCLA Division of Sports Medicine, University of California, Los Angeles

Abstract

An online survey was developed to assess the impact of sport specialization on highest competitive level achieved in American Judo. One hundred forty-seven athletes participated, including 14% having competed on an Olympic or World team. There was no statistically significant relationship between highest competitive level achieved and sport specialization. Ninety percent of elite athletes played other youth sports, with 10% at the collegiate level. There was a statistically significant relationship between judo starting age and highest competitive level. Those who competed on a national team were also more likely to have a parent who participated in judo ($p < 0.05$).

Key Words: martial arts, judo, sport specialization

Introduction

Judo is a martial art that has rapidly grown since its inception in 1882 with over 20 million practitioners worldwide.¹ Judo has four foundational principles – throws, hold-downs, strangulations, and armlocks. The benefits of judo are both physiologic and psychologic with reported improvements in physical measures such as muscle mass, strength, and aerobic capacity; as well as psychologic measures such as life satisfaction and quality of life.²⁻⁴ Judo is an Olympic sport with widespread popularity, with 393 competitors from 128 countries at the 2020 Tokyo Olympic Games.⁵ Opportunities for adult competition have also expanded with the introduction of the International Judo Federation (IJF) World Tour and adolescents with the Cadet World Championships, Junior World Championships, and Youth Olympic Games. As competitive opportunities increase, particularly for youth athletes, coaches and athletes are tasked with understanding how to best develop athletes.

To date, the influence of sport specialization on athlete success in judo has not been well-studied. This is relevant given recent increases in competitive international opportunities in addition to restrictions placed on elite athletes of all ages from competing in other combat sport from the IJF.⁶ The changing competitive landscape raises the question of how sport speciali-

zation in judo affects youth athletic development. In other sports, it is well known that sport specialization can lead to burnout, increased injury, and the decrement of transferable athletic skills.⁷⁻⁹ This study examines whether elite judo athletes (those who competed on a World or Olympic team) participated in other sports during their developmental years compared to non-elite athletes. Additionally, this study examines the correlation between age of first introduction to the sport and parental influence and athletic success. These findings may help inform policy and practice for the development of elite youth athletes.

Methods

From February to October 2020, an online survey was distributed to judo athletes ages 18 and older via email and social media. The surveys were distributed via email to Olympians selected for the 2020 Olympic Games and US national team members during the study period. Shareable links to the survey were also distributed on a social media account for the United States Judo Federation, a national organizing body, which has about ~1,600 followers at time of writing. Participants were asked basic demographics (age, gender, race) and highest competitive level attained in their career (i.e., World or Olympic Team Member, USA National Team, national tournaments, regional tournaments, recreational). Participants were also asked at what age they were first introduced to the sport, prior participation history in other sports, and parental participation in judo. Participation was voluntary and there was no follow up after the initial survey. The study was unfunded and IRB exempt, and used Chi-Square significance testing.

Results

One hundred forty-seven judo athletes completed the survey. Demographic data is presented in Table 1. Respondent average age was 38.4 years. Fourteen percent were current or former World or Olympic team members, 18% were current or former

national team members, and the remainder competed in domestic tournaments, locally or regionally, or were non-competitive.

Table 2 presents participation in other sports, average age of first introduction, and whether parents participated in judo, stratified by highest competitive level achieved. There were no statistically significant relationships between highest competitive level attained and competing in strictly judo during youth. 90% of World or Olympic team members reported playing a sport other than judo in the past with 45% playing another sport at the high school level and 10% playing another sport at the NCAA level. Wrestling and Track and Field were listed as sports played at the NCAA level. There was a statistically significant relationship between highest competitive level in judo and age of first introduction to judo ($p < 0.05$). World and Olympic team athletes started at a mean age of 7.7 years compared to 15 years for those who did not participate on a national team. Additionally, a national team were more likely to have a parent who participated in judo (44% vs 21%, $p < 0.05$).

Discussion

Sport Diversification

We did not find an association between sport specialization and competing at an elite level in judo. Forty-five percent of elite judo respondents played another sport in high school and 10% played another sport at the collegiate level. Proposed benefits from sport diversification include a broader repertoire of physiologic abilities and sport-transferrable athletic skills such as perceptual-tactical skills.¹⁰⁻¹¹ Athletes may also find more joy in sport and avoid burnout.¹²⁻¹³ Sport diversification may provide physical and psychologic benefits for developing judo athletes. Additionally, those reporting joy early in a sport may develop more active and healthy lifestyles in adulthood.¹⁴⁻¹⁶

Age of Introduction to Sport and Parental Influence

Elite athletes were more likely to start judo at an earlier age. The theory of easier motor skill acquisition at younger ages may promote judo-specific skills, though this warrants further investigation.¹⁷⁻¹⁸ Environmental factors such as parental participation in sport may contribute. Elite judo athletes were more likely to have a parent who participated in judo, which is consistent with other studies reporting that parental influence and parental success in sport can have strong effects on childhood participation and success in sports.¹⁹⁻²⁰ While it is not necessary to start judo early to achieve success, there is some association. Early exposure does not mean athletes need to specialize early to find success in sport.

Limitations

Our results suggest elite judo athletes in the US were sport diversified and participated in other sports at a high school or collegiate level. Prospective study is needed to determine the effect of sport specialization during childhood or adolescence.

Additionally, the United States has different judo infrastructure compared to other countries which limits international generalizability. The US has a limited number of geographically available training centers that offer athletes opportunity to specialize, some athletes need to travel to regional clubs to practice.

Other limitations include recall and sampling bias, and small sample size. To encourage broad participation, the survey was distributed via social media and email so the true response rate is not known and may be subject to sampling bias. Recall bias is likely present when recalling events during their competitive careers. The results are representative of the general population of judo athletes, future research would be needed for more understanding of sport specialization in judo.

Conclusion

Our study finds elite judo athletes were more likely to have a history of sports diversification, rather than specialization. This has potentially important policy implications for athlete development and competition. However, age of introduction and parental involvement in sport are also associated and a focus on building community infrastructure may be beneficial for elite judo athletes.

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Table 1: Survey Participant Demographic Data (n=147)

	N (%)
Mean Age	38.4
Gender	
Male	95 (65)
Female	52 (35)
Race and Ethnicity (Check All That Apply)	
American Indian or Alaska Native	3 (2)
Asian	49 (30)
Black or African American	2 (1)
Hispanic or Latino or Spanish Origin	16 (10)
Native Hawaiian or Other Pacific Islander	4 (2)
White	74 (46)
Prefer not to answer	5 (3)
Other	9 (4)
Highest Competitive Level	
Recreational (non-competitive)	8 (5)
Local and regional tournaments	25 (17)
National tournaments	68 (46)
USA National Team (international)	26 (18)
World or Olympic Team Member	20 (14)

Table 2: Participation, average age of first introduction, parental participation by highest competitive level attained.

	Participation in sports other than judo in past N (%)	Average age (years) of first introduction to judo
Recreational	4 (57)	26.7
Local and regional tournaments	21 (84)	21.2
National tournaments	51 (75)	11.6
USA National Team (international)	20 (80)	7.85
World or Olympic Team	18 (90)	7.74

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