



An Assessment of Instructional Methods, Student Perceptions, and Skill Acquisition in a Collegiate Beginner Judo Class

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Abstract

Objective Martial arts have become a method of promoting positive physical and psychosocial outcomes for millions worldwide (Woodward, 2009). While popular in many countries, the Olympic sport of Kodokan Judo has seen limited scientific examination in academic research (Paset et al., 2013). The goals of this study were to evaluate potential benefits of completing a beginner collegiate judo course, critically examine student perceptions of instructional methods and practice structure, and determine the extent to which students were able to acquire basic techniques. **Methods:** In a pretest-posttest design, students ($n = 18$) were surveyed about intrinsic characteristics and perceptions of instruction and evaluated on acquired skills. **Results:** Results indicated a significant increase in self-perceptions of knowledge ($p < .001$) and interest ($p = .028$) in judo along with athletic ability ($p = .034$) and fitness ($p = .003$). Instructional strategies included verbal explanations and physical demonstrations, and a blocked practice style was utilized in conjunction with reinforcing and corrective feedback. Skills testing revealed that students scored an average of 71% on the posttest, suggesting substantial progress over the 16-week period. **Conclusion:** These findings substantiate claims that physical education activity courses can be effective at increasing essential sport skills along with a proclivity for future participation.

Keywords: Judo, Sport Skills, Physical Education, Sport Pedagogy, Motor Learning

I. Introduction

Background

Previous empirical research has documented the physical and psychosocial benefits of martial arts training. When compared with sedentary individuals, there are physical benefits to participation such as improved aerobic capacity, body fat percentage, strength, coordination,

balance, and stability; psychosocially, benefits may include increased assertiveness, discipline and respect, cognitive and affective self-regulation, prosocial behavior, self-esteem, and cognitive performance (Douris & Chinan, 2004; Lakes & Hoyt, 2004; Weiser, Kutz, Kutz, & Weiser, 1995; Zetaruk, Violan, Zurakowski, & Micheli, 2005). Additionally, benefits have been observed in diverse age groups, including elementary school children, at-risk youth, and the elderly (Brudnak, Dundero, & Van Hecke, 2002; Lakes & Hoyt, 2004; Woodward, 2009). For many practitioners, martial arts training offers a goal-driven and disciplined, yet enjoyable, form of physical activity that may act as an alternative to more “traditional” forms of exercise (e.g., jogging or weightlifting) while also offering opportunities to learn new motor skills and establish social relationships (Woodward, 2009).

While certain styles of martial arts such as Tai Chi (see Jahnke, Larkey, Rogers, Etnier, & Lin, 2010 for a review) have been examined extensively in empirical research, others have not been examined in as much detail. The Olympic sport of Kodokan Judo possesses great physical, technical, and technical elements, and while over 180 countries worldwide are members of the International Judo Federation, research on this diverse and complex martial art has been limited (Peset et al., 2013). Judo is a grappling art that focuses on throws and holds designed to incapacitate an opponent or attacker and, depending on the style of instruction at a specific school, may focus more on sport competition than other martial arts such as Tai Chi or Aikido (Burke, Al-Adawi, Lee, & Audette, 2007). Numerous studies have provided empirical evidence that participation in sports and specifically, combat arts such as judo, can be life-long activities with positive psychological benefits, such as confidence, resilience, and tenacity, regardless of whether participation is oriented towards competition or personal goals (Matsumoto, Kanno, & Ha, 2009).

Even when controlling for differences in population sizes, international competitive judo participation rates in America are lower than those of many countries around the world such as Japan, Korea, France, and Brazil (International Judo Federation, n.d.). However, it seems that overall participation rates in martial arts have increased in recent years, possibly due to the congruent increase in interest and popularity surrounding mixed martial arts (MMA) competitions (Andrew, Kim, O’Neil, Greenwell, & James, 2009; Woodward, 2009). Outside of a traditional dojo (training hall), one prominent location that prospective students may be able to study martial arts such as judo is the college or university, in the form of a physical education activity course. Previous research has shown that students enroll in sport skills courses to learn a new activity, have fun, improve skills, and increase physical activity (Leenders, Sherman, & Ward, 2003). However, physical education course requirements at American four-year universities are at an all-time low, so the selection of such courses as electives may be largely motivated by the preferences, perceptions, or interests of the student (Cardinal, Sorenson, & Cardinal, 2012). Because students and instructors often have significant time, effort, and financial resources invested in the preparation, administration, and completion of such courses, it is important to examine the potential outcomes, both physical and psychological, to obtain empirical evidence of the implied benefits of participation.

Purpose

The purposes of the current study were threefold: (1) to evaluate the potential benefits of completing a beginner judo physical education course in terms of student self-perceptions, (2) to critically examine student perceptions of instructional methods and practice structure, and (3) to determine the extent to which students were able to acquire basic judo techniques in an introductory course.

II. Method

1. Participants

This study consisted of 18 students: 14 male and 4 female, ranging in age from 18 – 25 years old ($M = 21.2$, $SD = 2.04$), who were enrolled in a beginner judo activity course at a midwestern public university. A majority of participants self-described as beginners (i.e., less than one year of experience) in both the martial arts ($n = 14$) and the sport of judo ($n = 17$). This research was approved by the university Internal Review Board, and all participants were volunteers who signed an informed consent agreement prior to data collection. Participants' responses to survey instruments were kept confidential and anonymous

2. Materials

For the execution of judo skills, all participants possessed a *judogi* (uniform) of the appropriate size, which consisted of trousers and a jacket, along with a white belt. To participate in this study, participants were supplied with a pretest and a posttest at the appropriate time points in the semester. All examined techniques were taken from the martial art of Kodokan Judo, developed initially in 1882 by Dr. Jigoro Kano (Kano, 1986). A list of these techniques with their English translations can be found in Table 1.

Table 1. Examined Judo techniques with English translations

Category	Japanese Name	English Translation
<i>Nagewaza</i> (Throwing Techniques)	O-Goshi	Major Hip
	Seoinage	Shoulder Throw
	O-Soto-Gari	Major Outer Reap
	Koshi Guruma	Hip Wheel
	O-Uchi-Gari	Major Inner Reap
	Ko-Uchi-Gari	Minor Inner Reap
	De-Ashi-Barai	Advanced Foot Sweep
	Sasae Tsurikomi Ashi	Propping and Drawing Ankle Throw
	Hiza Guruma	Knee Wheel
	Kesa Gatame	Scarf Hold
<i>Newaza</i> (Ground Techniques)	Kuzure Kesa Gatame	Broken Scarf Hold
	Yoko Shiho Gatame	Side Four-Quarter Hold
	Kame Shiho Gatame	Upper Four-Quarter Hold
	Migi Zenpo Kaiten Ukemi	Right Forward Rolling Breakfall
	Hidari Zenpo Kaiten Ukemi	Left Forward Rolling Breakfall

3. Design

A pretest-posttest qualitative design was utilized to assess psychological outcomes in the form of students' self-perceptions in areas that may have changed as a result of completing the

course. The following areas were examined: knowledge of judo, interest in martial arts, interest in judo, level of athletic ability, level of fitness, self-defense capability, interest in competitive judo, and interest in an intermediate judo class (see Table 2). During the pretest, participants also provided demographic information. During the posttest only, two primary areas were assessed: (1) student perceptions of the instructional methods and practice structure via a qualitative survey, and (2) student learning outcomes in the form of a quantitative skills test. Table 3 provides a summary of responses to questions regarding instructional methods. For all survey instruments, question formatting, structure, and content were based on previous research on classroom assessment techniques (Angelo & Cross, 1993; Wright, 2008).

Table 2. Summary of student self-perceptions

Category	Pre-test Median	Pre-test Average	Pre-test SD	Post-test Median	Post-test Average	Post-test SD
Judo Knowledge	1.0	1.46	0.62	3.0	3.03	0.69
Martial Arts Interest	3.5	3.39	0.92	4.0	4.00	0.84
Judo Interest	3.0	3.28	0.89	4.0	4.05	0.73
Athletic Ability	3.5	3.45	0.62	4.0	3.81	0.55
Fitness Level	2.5	2.73	0.89	3.0	3.23	0.73
Self-Defense Capability	3.0	3.26	1.26	3.0	3.46	1.10
Competitive Judo Interest	2.0	2.25	1.22	2.5	2.70	1.33
Intermediate Judo Interest	3.0	3.19	1.20	4.0	3.59	1.04

Table 3. Summary of Student Perceptions of Instructional Methods

Category	Median	Average	SD
Instructor Enthusiasm	5.0	4.9	0.32
Instructor Preparation	5.0	4.95	0.24
Positive Attitude	5.0	4.95	0.24
Used Mainly Verbal Instruction	3.0	3.11	1.43
Used Mainly Physical Demonstrations	4.0	4.13	0.83
Incorporated Mental Skills	3.5	3.83	1.11
Used Significant Time for Warm-Up	3.0	3.21	1.15
Used Significant Time for Standing Techniques	4.0	4.31	0.67
Used Significant Time for Ground Techniques	3.0	2.99	0.77
Received Feedback Often (Frequency)	4.5	4.5	0.51
Typically Received Feedback After Good Trials	3.0	3.58	0.51
Typically Received Feedback After Poor Trials	3.0	3.35	0.91
Blocked Practice was Used	4.0	4.3	0.75

Technical Skills Have Improved	5.0	4.63	0.61
Self-Defense Capability Has Improved	4.0	4.4	0.61
Pace of Class was Too Slow	2.0	2.14	0.76

4. Procedure

Pretest survey data was collected on the first day of class, while posttest data was collected on the last day. For a standard 16-week semester, there was 15 weeks of instruction in between each time point. To connect results from the self-perceptions assessment at both time points, each participant was assigned a random identification number.

For posttest data, participants first completed the qualitative portion of the study before engaging in the quantitative portion. The latter was conducted in the form of a skills test that was led by the course instructor. Each judoka selected a partner of approximately the same body size with whom the required standing and ground techniques could be demonstrated. Table 4 provides a list of each of the specific throwing techniques that were selected for the course along with the associated scores. Students were evaluated by a panel of three judges, each of whom possessed the rank of Sankyū (brown belt) or higher. Scores for throws were broken down by the three stages of any judo throw: (1) *Kuzushi* (unbalancing), (2) *Tsukuri* (entry), and (3) *Take* (execution). Participants could receive a score in each of these areas ranging from 0-3, for a total of nine points on a given throw. A score of zero was defined as performance of the incorrect or an unidentifiable technique, a score of one was defined as performance at a low level of proficiency for the novice level with severe technical errors, a score of two was defined as an average level of proficiency for the novice level with moderate technical errors, and a score of three was defined as a high level of proficiency for the novice level with limited technical errors. Ground techniques were evaluated for correctness on the same scale (0-3) but were given an overall score only, for a maximum of three points. Table 5 provides a list of each of the specific ground techniques that were selected for the course along with the associated scores.

Table 4. Summary of scores for throwing techniques

<i>Nagewaza</i> (Throwing Technique)	<i>Kuzushi</i> (Unbalancing)	<i>Tsukuri</i> (Entry)	<i>Take</i> (Execution)	Performance <i>Average</i>	Performance <i>SD</i>
O-Goshi	2.22	2.37	2.26	2.28	0.71
Seoinage	2.11	2.22	2.13	2.16	0.66
O-Soto-Gari	1.91	2.26	2.19	2.12	0.74
Koshi Guruma	2.26	2.26	2.20	2.24	0.60
O-Uchi-Gari	1.72	2.00	2.11	1.93	0.82
Ko-Uchi-Gari	2.08	2.18	2.21	2.15	0.72
De-Ashi-Barai	1.80	1.96	2.07	1.95	0.68

Sasae Tsurikomi Ashi	1.94	2.04	2.11	2.02	0.83
Hiza Guruma	2.00	2.00	2.11	2.01	0.64
Overall Averages	2.00	2.14	2.15	2.10	0.71

Table 5. Summary of scores for ground techniques

<i>Newaza (Ground Technique)</i>	<i>Performance Average</i>	<i>Performance SD</i>
Kesa Gatame	2.67	0.55
Kuzure Kesa Gatame	2.58	0.50
Yoko Shiho Gatame	2.30	0.66
Kame Shiho Gatame	2.38	0.65
Migi Zenpo Kaiten Ukemi	2.58	0.61
Hidari Zenpo Kaiten Ukemi	2.30	0.67
Overall Averages	2.47	0.61

5. Data analysis

The dependent measures of the current study were participant responses to qualitative instruments along with participant performance on the quantitative skills test. Student self-perceptions were evaluated on a Likert scale ranging from 1-5, with each number representing the following response, respectively: very low, low, moderate, high, and very high. Responses were averaged across participants and potential differences from pretest to posttest were compared using a Wilcoxon Signed-Ranks Test for each category. For all statistical tests, alpha levels were set at .05.

Instructional methods and practice structure were evaluated using a combination of Likert-scale items and open-ended questions. Items on a Likert scale ranged from 1-5, with each number representing the following response, respectively: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. Scores on Likert-scale questions were averaged for each question and analyzed. For open-ended survey questions, themes were coded by researchers to determine trends. The resulting trends were then evaluated from a motor learning perspective to address adherence to best practices in this area.

For the quantitative skills test, participants were not pretested because it was assumed that, holding the rank of *Rokkyu* (white belts or novices), they would have little or no prior knowledge of the techniques being tested (e.g., Japanese nomenclature, steps for execution, applications, etc.). Therefore, it was assumed for the purposes of this study that any progress made in scoring was a result of enrollment in the course. Since there were three raters for the skills test, an intraclass correlation was used to assess inter-rater reliability. For analysis purposes, each participant was scored using the average score of the three raters. Much like a

standard examination in an academic course, participants were evaluated on their knowledge and performance on a scale of 100 points. Based on this information, deficiencies or proficiencies in both certain techniques and specific portions of performance could be determined. Furthermore, this scale allowed researchers to ascertain the amount of progress that each participant had made regarding skill acquisition.

III. Results

Student Self-Perceptions

When asked about their primary reason for taking the course, participants listed the following responses in order of prevalence: *interest in trying something fun or new* (44%), *need for an elective or additional credit(s)* (28%), *interest in martial arts or self-defense* (22%), and *increase fitness level* (6%). When asked their secondary reason for taking the course, participants listed the following responses in order of prevalence: *interest in martial arts or self-defense* (50%), *interest in trying something fun or new* (22%), *need for an elective or additional credit(s)* (11%), *increase fitness level* (11%), and *improvement of grade point average* (6%). On a Likert Scale from 1 (very low) – 5 (very high), participants' median self-ratings of judo knowledge during the pre-test were 1.0 with an average of 1.46 ($SD = .62$). Median ratings during the posttest were 3.0 with an average of 3.03 ($SD = .69$). A Wilcoxon Signed-Ranks Test revealed that participants showed significantly higher self-ratings of judo knowledge on the posttest, $Z = -3.71, p < .001$. Participants were also asked to rate their interest in martial arts and judo, specifically. Participants' median self-ratings of martial arts interest during the pre-test were 3.5 with an average of 3.39 ($SD = .92$). Median ratings during the posttest were 4.0 with an average of 4.00 ($SD = .84$). A Wilcoxon Signed-Ranks Test revealed that participants showed no significant difference in self-ratings of martial arts interest on the posttest, $Z = -1.87, p = .062$. Participants' median self-ratings of judo interest during the pre-test were 3.0 with an average of 3.28 ($SD = .89$). Median ratings during the posttest were 4.0 with an average of 4.05 ($SD = 0.73$). A Wilcoxon Signed-Ranks Test revealed that participants showed significantly higher self-ratings of judo interest on the posttest, $Z = -2.20, p = .028$. Participants' median self-ratings of athletic ability during the pre-test were 3.5 with an average of 3.45 ($SD = .62$). Median ratings during the posttest were 4.0 with an average of 3.81 ($SD = .55$). A Wilcoxon Signed-Ranks Test revealed that participants showed significantly higher self-ratings of athletic ability on the posttest, $Z = -2.12, p = .034$. Participants' median self-ratings of fitness during the pre-test were 2.5 with an average of 2.73 ($SD = .89$). Median ratings during the posttest were 3.0 with an average of 3.23 ($SD = .73$). A Wilcoxon Signed-Ranks Test revealed that participants showed significantly higher self-ratings of fitness on the posttest, $Z = -3.00, p = .003$. Participants' median self-ratings of self-defense capability during the pre-test were 3.0 with an average of 3.26 ($SD = 1.26$). Median ratings during the posttest were 3.0 with an average of 3.46 ($SD = 1.10$). A Wilcoxon Signed-Ranks Test that participants showed no significant difference in self-ratings of self-defense capability on the posttest, $Z = -0.86, p = .392$. Participants' median self-ratings of competitive judo interest during the pre-test were 2.0 with an average of 2.25 ($SD = 1.22$). Median ratings during the posttest were 2.5 with an average of 2.70 ($SD = 1.33$). A Wilcoxon Signed-Ranks Test revealed that participants

showed no significant difference in self-ratings of competitive judo interest on the posttest, $Z = -1.33$, $p = .183$. Participants' median self-ratings of interest in an intermediate judo course during the pre-test were 3.0 with an average of 3.19 ($SD = 1.20$). Median ratings during the posttest were 4.0 with an average of 3.59 ($SD = 1.04$). A Wilcoxon Signed-Ranks Test revealed that participants showed no significant difference in self-ratings of interest in an intermediate judo course on the posttest, $Z = -1.52$, $p = .130$.

Instructional Methods and Practice Structure

Participants' scores on both qualitative and open-ended questions were recorded and analyzed to provide an indication of students' opinions concerning the quality and substance of instructional methods in the class. Students who completed the survey reported having between 1-2 absences for the duration of the term ($M = 1.28$, $SD = .94$) with a range from 0-3 absences. Results on a Likert scale from 1 (strongly disagree) – 5 (strongly agree) indicated that the instructor was enthusiastic ($Med = 5.0$, $M = 4.9$, $SD = .32$), well-prepared ($Med = 5$, $M = 4.95$, $SD = .24$), and displayed a positive attitude ($Med = 5.0$, $M = 4.95$, $SD = .24$). The instructor utilized a combination of verbal explanations ($Med = 3.0$, $M = 3.11$, $SD = 1.43$) and physical demonstrations ($Med = 4.0$, $M = 4.13$, $SD = .83$) to teach the course with a preference toward demonstration. Mental aspects of judo ($Med = 3.5$, $M = 3.83$, $SD = 1.11$) were discussed but not necessarily emphasized according to students. Standing techniques were the most practiced portion of the course ($Med = 4.0$, $M = 4.31$, $SD = .67$) when compared with ground techniques ($Med = 3.0$, $M = 2.99$, $SD = 0.77$) or the warm-up ($Med = 3.0$, $M = 3.21$, $SD = 1.15$). The practice structure consisted of blocked practice ($Med = 4.0$, $M = 4.30$, $SD = .75$), and participants felt that they received feedback often ($Med = 4.5$, $M = 4.5$, $SD = .51$) with the breakdown of feedback after good trials ($Med = 3.0$, $M = 3.58$, $SD = .86$) and poor trials ($Med = 3.0$, $M = 3.35$, $SD = .91$) being approximately equal. The majority of participants (15) reported that the number of learned techniques and course pacing were appropriate. Students disagreed that the pace was too slow ($Med = 2.0$, $M = 2.14$, $SD = .76$) but agreed that both their technical prowess in judo ($Med = 5.0$, $M = 4.63$, $SD = .61$) and confidence in self-defense had increased ($Med = 4.0$, $M = 4.40$, $SD = .61$) as a result of taking the course.

Open-ended questions revealed that a typical class structure was as follows: warm-up for 15-20 minutes, perform rollouts (falls) for 5-10 minutes, review and practice previous techniques (if applicable), describe and practice new techniques, and provide time for questions or discussion. Student goals revolved around learning more about the martial art of judo, increasing self-defense capability, and gaining more confidence in these areas. A majority of participants (14) reported that course activities primarily related to the practice of standing throwing techniques, while most participants (10) reported that ground techniques were performed the least. Helpful forms of practice included the use of blocked practice (repetition) to initially learn techniques and dynamic (moving) drills to improve techniques. With regards to the focus of practice, a majority of participants (15) indicated that the instructor emphasized a focus on achieving the correct steps of each technique rather than achieving a desired or overall outcome. With regards to the type of feedback received during practice, a most participants (12) felt that both reinforcing and corrective feedback were equally and regularly provided. Strengths of instruction included the appropriate pacing of the course, the

complementary combination of verbal explanations and physical demonstrations, and the necessary amount of repetition for learning. When discussing weaknesses of the course, students felt that the memorization of the Japanese terminology impeded learning and felt that the course could have devoted more time to the application of judo techniques specifically for self-defense. When discussing preferred techniques, a majority (10) mentioned either *O-Goshi* or *O-Soto-Gari*. When discussing least preferred techniques, a significant portion of students (approximately 30%) listed *De-Ashi-Barai*.

Skills Test

The intraclass correlation between the three independent raters indicated moderate inter-rater reliability, ICC (14, 28) = .65. Overall averages for each standing throw revealed proficiency in the following order from best to worst: *O-Goshi* ($M = 2.28, SD = .71$), *Koshi Guruma* ($M = 2.24, SD = .60$), *Seoinage* ($M = 2.16, SD = .66$), *Ko-Uchi-Gari* ($M = 2.15, SD = .72$), *O-Soto-Gari* ($M = 2.12, SD = .74$), *Sasae Tsurikomi Ashi* ($M = 2.02, SD = .83$), *Hiza Guruma* ($M = 2.01, SD = .64$), *De-Ashi-Barai* ($M = 1.95, SD = .68$), and *O-Uchi-Gari* ($M = 1.93, SD = .82$). Overall averages for each phase of throwing revealed proficiency in the following order from best to worst: *Kake*, ($M = 2.16, SD = .70$), *Tsukuri* ($M = 2.14, SD = .72$), and *Kuzushi* ($M = 2.00, SD = .71$). Regarding ground techniques, overall averages revealed proficiency in the following order from best to worst: *Kesa Gatame* ($M = 2.67, SD = .55$), *Kuzure Kesa Gatame* ($M = 2.58, SD = .50$), *Migi Zenpo Kaiten Ukemi* ($M = 2.58, SD = .61$), *Kame Shiho Gatame* ($M = 2.38, SD = .65$), *Yoko Shiho Gatame* ($M = 2.30, SD = .66$), and *Hidari Zenpo Kaiten Ukemi* ($M = 2.30, SD = .67$). After totaling all performance scores, participants averaged 70.89% out of 100 overall points.

IV. Discussion

The Findings and Implications

The results of this study provide insight into student self-perceptions, course perceptions, instructional methods, and the specific skills acquired during the 16-week semester. Results indicated that students, a majority of whom self-described as beginners in both the martial arts and judo, felt that both their knowledge and interest in the sport of judo had increased as a result of taking the course. These results support the critical importance of physical education activity courses with respect to growing the participatory population and increasing exposure of a particular sport. Such a course that results in such positive outcomes has the potential to produce a future judo practitioner for life, or provide the incentive for an individual to recommend the sport to a family member or friend. Such outcomes could be invaluable for growing the sport in a grassroots fashion. Furthermore, student self-perceptions of athletic ability and overall fitness increased after taking the course. These changes in thinking and the related psychological construct of self-image could have positive correlations with outcomes such as increasing one's self-esteem, aerobic or anaerobic performance capability, or increasing one's quality of life through participation in higher amounts of regular physical activity. As epidemiological research would suggest, poor diet combined with a lack of

physical activity and the resulting obesity epidemic has become a significant problem in America (Moore, Harris, Carlson, Kruger, & Fulton, 2012).

It is also important to note that student perceptions of confidence in self-defense, interest in competitive judo, and interest in an intermediate judo course did not significantly change after taking the beginner course. While judo can be useful for self-defense purposes, the general idea of self-defense can be broad and diverse due to the practically limitless possibilities for a potentially threatening encounter, so it is difficult to gain specific insight into individual thoughts and perception regarding this topic. Perhaps an increased emphasis on the potential self-defense applications (rather than sport applications) of judo is needed to change this outcome. One potential way to address this issue would be to incorporate self-defense scenarios into practice that do not involve *judogis* (uniforms), as would typically be seen outside the *dojo* (training hall) and feature realistic scenarios where a street assailant could be thrown in self-defense. Participants in the current study also did not seem to experience an increase in their desire to compete in judo. Given that most students chose to take the course in order experience something fun or new, or receive additional university credits, it seems appropriate that competitive judo may not be an appropriate performance outlet for such a group. Competitive judo is challenging, rigorous, and technically-demanding. As such, these characteristics may not match well with the current sample. Additionally, participants did not show increased interest over the duration of the semester in an intermediate course, if it were to be offered by the university. As mentioned earlier when referencing competition, such a course may not fit the goals and schedules of the sample. However, these results do not necessarily indicate that participants are less likely to practice judo – it is an activity that can be performed in a variety of settings (e.g., classroom, recreational center, elite academy) with a variety of goals (e.g., fitness, self-defense, competition) in mind (Matsumoto, Kanno, & Ha, 2009).

Student accounts of practice format indicated that a brief warm-up and series of rollout exercises was performed before the lesson and practice session. As is consistent with the overall emphasis of the sport of judo, standing techniques were practiced more than ground techniques. Student accounts of practice structure generally indicated that the same technique would be performed repeatedly, suggesting a blocked practice format (Schmidt & Lee, 2013). While this format may be appropriate for beginners who are initially acquiring motor patterns, it may be necessary to switch to a serial or random practice format if students excel or improve. Overall, students seemed to appreciate the time to perform multiple repetitions of a technique, the opportunity to ask questions if needed, the inclusion of dynamic partner drills instead of static drills as skill increased, and the combination of verbal explanations and physical demonstrations when being taught a new skill or reviewing a previously-learned skill.

Previous research in the field of motor learning suggests that instructors should utilize diverse types of feedback and limit the amount of feedback as the learner gains experience (Salmoni, Schmidt, & Walter, 1984). The present study suggests a balance in that students generally received both positive (reinforcing) and corrective feedback to improve technique. While participants felt that they received frequent feedback overall, little insight was gained into changes in the frequency of feedback as the semester progressed. Participants also indicated that they received feedback equally after both good and poor trials, which suggests a neutral preference from the instructor. Previous research in this area has shown benefits for

feedback after both trials perceived as good by the learner and trials that are quantifiably good in relation to others (Chiviacowsky & Wulf, 2005; 2007). Thus, it may be beneficial for the instructor to occasionally discriminate between good and poor trials either via their own opinion or that of the student and subsequently ascertain when it is most appropriate to provide feedback.

Research on attentional focus indicates that learners should utilize an external focus of attention (i.e., movement effects) to improve motor skill performance (Wulf & Lewthwaite, 2016; Wulf & Prinz, 2001). However, this concept is challenging in judo since there are no implements other than a uniform, and the person's body positioning (e.g., hands, hips, feet) often need to be adjusted to produce proper technique. The present study revealed that most learners focused on executing the correct steps of each technique rather than producing a certain outcome, which could lead to attentional foci that are largely internal. It may be helpful for instructors to provide learners with cues from the environment, such as visual targets on the opponent, wall, or floor to facilitate an external focus of attention.

Overall, students received a rating of approximately 71% on skills testing. While this score may not seem impressive initially, it is important to remember that the majority of participants identified as beginners in judo and likely to be largely unfamiliar with the course techniques or Japanese terminology. Due to the likelihood of novices lacking prerequisite knowledge in these areas, there was no pretest conducted to determine participant skill level prior to taking the course. Instead, it was assumed that performance on the skills test was primarily a result of course participation. Considering these circumstances, an average of 71% on 15 separate novel techniques is substantive for the learning period of a single semester.

Several interesting results emerge from the skill testing. First, of the three primary parts of a judo throw (*Kuzushi*, *Tsukuri*, *Kake*), participants struggled the most with the *Kuzushi*, as ratings were lowest in this area. Unbalancing one's opponent is a critical prerequisite to any successful throw, yet beginners seem to struggle with understanding and performing this technical aspect. Additionally, ratings tended to be higher for techniques that were introduced closer to the beginning of the term (e.g., *O-Goshi*, *Seoinage*, *Kesa Gatame*) suggesting that these early techniques may act as simple foundations for later, more complex techniques and that the additional repetitions over time benefit learning. Finally, the techniques that were taught in the course were primarily right-handed and thus, left-handed techniques were not tested. As an indicator of the preference for a right-side technique, participants performed right *ukemi* (breakfalls) to a higher standard than left *ukemi*. One could postulate with some degree of certainty that other left-handed techniques would suffer in performance scores as well. While it is generally accepted that performers (e.g., athletes, musicians, artists) will have a preference for predominantly executing a task with the right or left hand, the potential benefits of ambidextrous performance such as versatility or bilateral transfer should not be ignored (Schmidt, Lee, Winstein, Wulf, & Zelaznik, 2018).

Limitations

The current study featured results from the classes of single judo instructor at a Midwestern university in the United States. As a result, it is difficult to determine if these results generalize to all university judo or physical education activity courses across the country.

Additionally, when considering the worldwide popularity, diversity, and complexity of judo, it is likely that instructional methods may differ across instructors and nations greatly. Previous research in survey design was utilized to guide the wording and content of the instruments in this study, and experts in relevant areas, such as judo and motor learning, were consulted to improve study content. However, the instruments that were utilized in this study have not been rigorously tested for reliability and validity and were designed solely for study purposes. Further examination is needed to determine if the format or content could be applied to future judo research.

Previous studies with independent raters have sometimes utilized an acceptable correlational threshold of inter-rater reliability of 0.75 (Gwet, 2012). However, statistical analysis revealed that the inter-rater reliability of the current study was below this threshold. This variability in scoring could be due to the differences in rank and experience level of the raters. Ranks ranged across three promotional levels from *Sankyu* (first degree brown) to *Shodan* (first degree black). Additionally, performances during testing were not video recorded in the current study, and thus, scores were determined rapidly after immediately viewing each technique. The ability to replay the movements and discuss specific aspects would have likely improved the consistency of the evaluation process.

Conclusions and Future Directions

The purposes of the current study were to evaluate the potential benefits of completing a beginner judo physical education course in terms of student self-perceptions, critically examine student perceptions of instructional methods and practice structure, and determine the extent to which students were able to acquire basic judo techniques in an introductory course. University physical education courses, such as those in the sport of judo, can increase student interest and knowledge in the area in question while also improving student perceptions of athletic ability and fitness. Furthermore, motor learning principles such as practice structure, feedback, and attentional focus can be utilized by instructors of all levels to improve learning outcomes. Although motor skill acquisition is a complex process involving numerous variables, it is evident that novices can make significant progress in this area during a single semester-long course, and these results have the potential to influence future levels of physical activity and sport participation. Due to the large numbers of practitioners of judo across the globe and the potential for differences in training techniques, instructional philosophies, and participant goals, more research is needed with diverse populations to determine how these results would generalize. Additionally, due to the potential for subjectivity in rating and scoring, it is suggested that training and technology be utilized to (re)evaluate techniques as needed.

Appendix: Glossary

1. Dojo: Training hall
2. Judogi: Uniform for practicing judo
3. Kake: Execution or follow-through of a throwing technique
4. Kuzushi: Unbalancing during a throwing technique

5. Nagewaza: General term for all throwing techniques
6. Newaza: General term for all ground techniques
7. Rokkyu: Rank of sixth kyu or white belt
8. Sankyu: Rank of third kyu or brown belt
9. Tsukuri: Entry or “fitting-in” during a throwing technique
10. Ukemi: Breakfall techniques

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