

Training the body and mind: Examining psychological correlates of Taekwondo

Emily R. Weiss ^a
Joan G. Miller ^a

a. Department of Psychology, The New School for Social Research, NY, New York

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Abstract

Objective: Previous research suggests that martial arts practice may be associated with enhanced psychological and physical wellbeing. However, few studies have explored the effects of Taekwondo on these outcomes in a representative sample of practitioners. **Methods:** The present study examines a sample of Taekwondo practitioners with an age range of 18-61 years, assessing the relationships between Taekwondo experience and self-reported body image perceptions, self-esteem, as well as perceptions of overall mental and physical health. It also explores practitioners' motivations for Taekwondo training through analyses of participants' responses to an open-ended question. **Results:** Results demonstrated that Taekwondo experience was significantly associated with more positive ratings of self-esteem and of body image, and a stronger belief that Taekwondo influences physical health. Qualitative results revealed that participants reported physical, psychological, and social motivations for participating in Taekwondo, and Taekwondo experience was associated with a greater number of perceived psychological motivations. **Conclusion:** The potential therapeutic implications of these findings and directions for future research are discussed.

Keywords: Taekwondo, self-esteem, body image, wellbeing, mental health

I. Introduction

Training the body and the mind: Examining psychological correlates of Taekwondo. In many forms of martial arts, spiritual, mental, and physical development have been traditionally conceptualized as interrelated processes (Burke, Al-Adawi, Lee, & Audette, 2007). In Taekwondo, a martial art originating from Korea, the interconnectedness of physical and psychological fitness has been apparent throughout history. Modern Taekwondo evolved from an ancient fighting system in which ethical teachings and character development were integral to training, and practitioners were expected to use these teachings to guide their lifestyles (Park & Gerrard, 2000).

Present-day Taekwondo adheres to a philosophy similar to the one belonging to its ancient predecessor (Park & Gerrard, 2000), with psychological, physical, and spiritual aspects often incorporated into training (Lee, 2010). Practitioners are expected to display respect for oneself and for others, humility, perseverance, self-control, and honesty in order to better ascribe to the guiding principles of the martial art (Park & Gerrard, 2000). Many modern Taekwondo schools and training centers incorporate such values into their curriculums and place a heavy emphasis on their importance. Thus, for many Taekwondo practitioners, mastering this art is dependent on training both the mind and the body. The inseparability of the two may be what makes this discipline important not only for physical health but also for psychological wellbeing.

However, Taekwondo has not yet been comprehensively examined in the context of psychological research. Following a brief overview of the literature focusing on Taekwondo and mental health, we present a preliminary empirical analysis of the relationships among Taekwondo participation and a number of psychological and health-related variables. The present research will also provide insight into practitioners' motivations for Taekwondo participation. This is done in an attempt to better understand the ways in which practitioners conceptualize their involvement in Taekwondo and to determine whether traditional Taekwondo philosophies are embedded in modern-day practice.

Taekwondo in the Literature

The research focusing on Taekwondo's impact on psychological health, although limited, suggests it is associated with a number of positive outcomes. These include increased cognitive and affective self-regulation and prosocial behavior in children (Lakes & Hoyt, 2004), and reduced aggressive behavior in youth and undergraduate populations (Harwood, Lavidor, & Rassovsky, 2017; Parthi, 2013). Studies have also demonstrated reduced levels of anxiety (Kurian, Caterino, & Kulhavy, 1993), improvements in mood (San Juan, Mateo, & Pieter, 2014; Toskovic, 2001; Yang, Ko, & Roh, 2018), and enhanced strategies for coping with and managing stress (Petrovic, 2017) in Taekwondo students.

However, Taekwondo remains an understudied sport, with many martial arts studies focusing on practices such as Karate (e.g., Richman & Rehberg, 1986). Outcomes associated with other styles of martial arts may not generalize to Taekwondo practitioners. Each martial arts discipline is distinct, developing independently within its own cultural context (Burke et al., 2007), and promoting different technical skills and practices (Toskovic, 2001). Moreover, conflicting findings have sometimes emerged when examining different disciplines. One study found that whereas Karate participation led to a reduction in state anxiety levels, Aikido participation was unrelated to changes in anxiety (Foster, 1997).

Relatedly, much of the previous work focusing exclusively on Taekwondo students concentrates only on university-age samples (e.g., Finkenberg, 1990; Toskovic, 2001; Petrovic, 2017) or children (Lakes & Hoyt, 2004). Taekwondo training centers often offer classes for students of all ages; thus, it is imperative to explore the experiences of older Taekwondo practitioners as well. The results from studies conducted only on young adult samples cannot necessarily be generalized to middle-aged or older adult populations, indicating a need for more research on martial artists who fall within these age groups

Taekwondo and Wellbeing

To better understand whether Taekwondo training affects individuals' wellbeing, it is valuable to study variables that have received minimal attention in the context of Taekwondo, yet display positive relationships with other martial arts and exercise activities.

Increases in self-esteem have been connected to exercise in both theoretical and empirical work. The Exercise Self-Esteem Model (EXSEM; Sonstroem, Harlow, & Jacobs, 1994; Sonstroem & Morgan, 1989) conceptualizes self-esteem as a hierarchical construct, with global self-esteem subsuming several more specific subdomains (e.g., academic; physical). Participation in regular exercise influences the subdomain of physical self-worth, which can be further broken down into body attractiveness, body strength, body condition, and sports competence (Fox & Corbin, 1989). Exercise facilitates changes at these more specific levels, which ultimately generalize and influence global levels of self-esteem.

Several empirical studies have provided support for this model (e.g., Li et al., 2002). Moreover, increases in self-esteem are often associated with a variety of exercise activities (e.g., Taspinar, Aslan, Agbuga, & Taspinar, 2014), including martial arts participation. Notably, Taekwondo training has been positively associated with overall self-concept and with physical self-concept in female undergraduate students. Previous research has also demonstrated improvements in self-esteem (Lee, Lee, & Woo, 2010; Li et al., 2002) and all four subdomains of physical self-worth (Li et al., 2002) in elderly individuals as a function of Tai Chi interventions. In Karate students, self-esteem levels are positively correlated with higher belt rank (i.e., more experience with the martial art; Richman & Rehberg, 1986).

In contrast to this limited, but encouraging evidence, Foster (1997) found that self-esteem levels were unrelated to Aikido involvement, and Lakes and Hoyt (2004) found no improvements in self-esteem levels of 4th and 5th-grade children as a function of Taekwondo training. Thus, despite the large body of research supporting the association between exercise and self-esteem, the relationship between martial arts and self-esteem, especially in the context of Taekwondo, remains equivocal and in need of further exploration.

Body image perceptions are theoretically tied to self-esteem in the Exercise Self-Esteem Model through the physical self-worth subdomain of body attractiveness, and empirical work has demonstrated that body dissatisfaction predicts low self-esteem (Tiggemann, 2005). Multifarious types of exercise can lead to improvements in body image perceptions (e.g., Hausenblaus & Fallon, 2006) including yoga, resistance training (e.g., Taspinar et al., 2014), and dance (e.g. Hös, 2005). Given the respective connections among physical self-concept, physical self-worth, Taekwondo (Finkenberg, 1990), and Tai Chi (Li et al., 2002), a relationship may exist between Taekwondo and body image perceptions. However, this relationship remains unexplored.

Self-esteem is also associated with more general indices of health and wellbeing. Poor self-esteem in adolescence predicts worse mental and physical health in adulthood (Trzesniewski et al., 2006), and low self-esteem is found in many forms of mental illness (Fox, 1999). Importantly, many large scale studies have demonstrated that exercise and physical activity are associated with psychological wellbeing (Fox, 1999), including martial arts engagement. Improvements in physical and psychological health-related quality of life have been observed following a Tai Chi intervention (Lee et al., 2010), and martial artists from a

variety of disciplines scored higher than did non-martial artists on a multidimensional measure of health-related quality of life (Draxler, Ostermann, & Honekamp, 2011). It is thus reasonable to predict that a relationship exists between Taekwondo and perceived mental and physical health, but a paucity of research exists in this area.

Perceptions of Taekwondo Training

Understanding the underlying motives and perceived benefits of Taekwondo training may provide insight into its effects on wellbeing. Perhaps in addition to improvements in wellbeing associated more generally with exercise, Taekwondo training offers distinct mental health benefits as a result of its heavy emphasis on character development.

Indeed, qualitative studies have demonstrated that martial arts training is conceptualized as a means for psychological growth and development (Columbus & Rice, 1998), self-improvement (Konzak & Boudreau, 1984), better understanding oneself, and as a mechanism for coping with difficult life transitions (Columbus & Rice, 1998). Practitioners have reported improvements in areas of respect, self-confidence, moral development, spirit and energy (i.e., not giving up in the face of adversity) in either themselves or their children who were involved in martial arts training (Lantz, 2002).

However, no study has explored underlying motivations or perceived training benefits of Taekwondo students exclusively. Although a few studies (Columbus & Rice, 1998; Lantz, 2002) have included Taekwondo students, only one study (Ko & Kim, 2010) explored differences between martial arts disciplines using a survey design. The present study aims to extend the literature on martial artists' motivation and perceived benefits of training through the utilization of an open-ended design in a sample of Taekwondo students exclusively.

The Present Study

Taken together, results from previous empirical studies along with theoretical work suggest that Taekwondo may have positive impacts on psychological health and wellbeing. However, Taekwondo remains an understudied sport. In taking a step towards filling this gap in the literature, the present study seeks to examine the associations between Taekwondo experience and wellbeing, focusing on several variables that have been previously explored within various other samples.

Firstly, it is hypothesized that greater amounts of Taekwondo experience (as measured by the length of months or years spent training in Taekwondo) will be positively associated with higher levels of self-esteem and more positive body image perceptions. Secondly, we hypothesize that more Taekwondo experience will be positively correlated with overall physical and mental health ratings, and with a stronger belief that Taekwondo is influential on physical and mental health.

Finally, this study aims to obtain insight into practitioners' motivations for Taekwondo participation in an attempt to better understand whether the values central to traditional Taekwondo are embodied in modern day practice. This may provide a deeper understanding of the mechanisms through which Taekwondo practice is related to health and wellbeing.

II. Method

1. Participants

Data were collected from a group of Taekwondo students who had just participated in a Taekwondo training session. The sample ($n = 57$) consisted of 32 male and 24 female participants from a large Taekwondo organization in the Northeastern United States. Data for one participant's gender was not available due to a defective questionnaire packet. The majority of the participants identified themselves as White or Caucasian (58.9%). The remaining participants identified themselves as Asian (17.9%), Biracial or Multi-racial (7.1%), Black or African American (8.9%), or Hispanic (7.1%). Participants' ages ranged between 18 and 61 ($M = 37.75$, $SD = 14.60$), with a median age of 40 years-old. Taekwondo experience ranged from 3 weeks to 34 years, ($M = 4.75$, $SD = 6.20$), with a median of 2 years of training. A number of participants were excluded from certain analyses due to defective questionnaire packets ($n = 1$) or failure to respond to the questions ($n = 4$).

2. Measurement

Demographics

Participants completed a demographics questionnaire that assessed their age, ethnicity, and gender. On this questionnaire, participants were also asked to indicate the amount of training experience they had in Taekwondo by answering the question, "How long have you have been participating in Taekwondo classes/training?", and were prompted to write their responses in the form of months or years. Responses were later coded in terms of years (e.g., 6 months = .5 years). This variable is referred to as "years of Taekwondo experience", or "Taekwondo experience" throughout the manuscript.

Reasons for taekwondo participation

Participants were asked to indicate the reasons why they chose to participate in Taekwondo classes. The question read: "please describe the reason(s) why you participate in Taekwondo. Please explain as fully as possible." Participants were given the remainder of the page to write their answers. This question was placed at the beginning of the questionnaire to avoid the subsequent measures influencing participants' responses.

Self-esteem

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) was used to assess levels of self-esteem. The Scale is one of the most widely used self-report measures and has high internal consistency and test-retest reliability (Robinson, Shaver, & Wrightsman, 2013). In the present study, the Scale yielded high internal consistency (Cronbach's $\alpha = .90$). The Rosenberg Self-Esteem Scale consists of 10 items, and includes statements such as, "All and all, I am inclined to feel that I am a failure." Participants were asked to indicate the degree to which they agreed with each statement, with response choices ranging from 1 (strongly agree) to 4 (strongly disagree).

Body image

Perceptions of body image were assessed using the Body Image Satisfaction Scale (BISS; Holsen, Jones & Birkeland, 2012a). This scale consists of 4 statements assessing global satisfaction/dissatisfaction with one's body, and is appropriate for use with both males and

females (e.g., Holsen, Joenes, & Birkeland, 2012b). For instance, one item on the scale states: “I would like to change a good deal about my body.” These items are rated on a scale of 1 (does not apply at all) to 6 (applies exactly). The BISS showed acceptable internal consistency (Cronbach’s $\alpha = .75$).

Perceptions of physical & mental health

Participants were asked to rate their overall physical and mental health on a scale of 1 (extremely poor) to 6 (excellent). Following this, two questions were asked to determine if participants felt that their involvement in Taekwondo influenced their physical and mental health. The questions stated: “How influential do you feel your participation in Taekwondo is on your physical (mental) health?” These items were rated on a scale of 1 (not at all influential) to 6 (extremely influential). This was placed at the end of the questionnaire in order to reduce the possibility of biasing responses on the Rosenberg Self-Esteem Scale, the Body Image Satisfaction Scale, and to the open-ended question.

3. Procedure

In-person data were collected from students at 10 Taekwondo schools and 1 university Taekwondo club in Connecticut, with permission from each location’s head instructor. Each location is independently run; however, all are operated under the same organization.

Questionnaires were distributed immediately after a training session and, when feasible, the first author visited each location in order to administer the questionnaires to participants. For cases in which this was not possible, blank copies of the questionnaires were given to instructors, who administered them according to a procedure outlined by the PI. In every case, Taekwondo students were informed that participation was voluntary and that their responses would remain anonymous. All participants gave written consent before beginning the questionnaires.

Qualitative coding

Responses to the open-ended question were coded according to a scheme developed by the authors. The coding scheme was developed based on the participants’ responses; however, it was also guided by previous psychological research and Taekwondo philosophy. Previous research has provided insight into martial arts practitioners’ motivations for participating in their sport, and the first author of this paper has 20 years of experience with Taekwondo and its philosophies. However, even when participants’ responses did not adhere to what has been previously reported in the literature, the responses were still included in the analysis. Thus, the themes developed for the present paper encompass the entirety of the responses reported by participants.

First, the responses were read in their entirety in order to determine if patterns existed within the data. Participants’ responses were then aggregated into subthemes, and ultimately collapsed into broader main themes. A subset of responses were coded by an independent rater in order to establish inter-rater reliability, and following discussion, Cohen’s Kappa yielded excellent inter-rater reliability, $\kappa = .941$, $p < .001$. The data revealed 16 subthemes that were

collapsed into four main themes (Enduring Psychological, State Psychological, Physical, and Social Motivations). Table 1 contains all subthemes and their respective main themes.

Table 1. Themes Reported by Taekwondo Practitioners

1. Enduring Psychological Motivations	3. Physical Motivations
a. Discipline; focus; mental challenges	a. Exercise; weight loss
b. Improved morality; character building	b. Physical conditioning
c. Self-confidence	c. Learn a new skill; physical challenges
d. TKD shapes outlook on life	d. Learn self-defense
2. State Psychological Motivations	4. Social Motivations
a. Avoid boredom	a. Social engagement
b. Reduce stress	b. Connect with family
c. Enjoyment/interest	c. Teach other students
d. Improve mental state (e.g., wellbeing)	d. Admire/respect instructor

Note. This table displays the themes and subthemes developed from participants' responses to an open-ended question where they indicated their reasons for Taekwondo participation.

Scores for each theme were created in order to examine the number of psychological, physical, and social benefits participants reported, by summing the number of subthemes participants reported into a total score for the respective main theme. For instance, if a participant described Taekwondo as an enjoyable activity (State Psychological Motivation) and as a form of stress relief (State Psychological Motivation), that participant received a score of 2 for the theme, State Psychological Motivations.

III. Results

1. Main Analysis

Preliminary Analyses

Due to the heterogeneity of the sample, a number of preliminary analyses were performed to rule out possible confounding variables. Firstly, since the PI was not present to administer the questionnaire to all participants, a multivariate analysis of variance (MANOVA) was conducted to determine whether her presence influenced any of the variables of interest. Using Wilk's lambda, the main effect of the PI's presence was significant, $\Lambda = .64$, $F(7, 49) = 3.80$, $p = .002$, $\eta^2 = .36$. There was a significant difference in participants' perceptions of their overall mental health, $F(1, 53) = 13.93$, $p < .001$, $\eta^2 = .21$. Participants reported significantly lower perceptions of their overall mental health when the PI was present for data collection ($M = 4.41$, $SE = .16$, 95% CI [4.01, 4.73]) than when the PI was not present ($M = 5.40$, $SE = .21$, 95% CI [4.98, 5.82]). Similarly, participants differed in their reported levels of overall physical health as a function of whether or not the PI was present, $F(1, 53) = 7.52$, $p = .008$, $\eta^2 = .12$, reporting significantly overall lower physical health ratings when the PI was present ($M = 4.50$, $SE = .13$, 95% CI [4.24, 4.77]), than when the PI was not present, ($M = 5.10$, $SE = .18$, 95% CI [4.75, 5.45]). In light of this finding, the PI's presence was used as a covariate when analyzing these variables.

Bivariate correlations revealed that age was significantly and positively associated with ratings of self-esteem, $r = .47$, $p < .001$, and with perceptions of Taekwondo as influential on

mental, $r = .33$, $p = .015$, and physical health, and $r = .32$, $p = .02$. A positive correlation was observed between age and ratings of overall mental health, $r = .43$, $p = .001$, and controlling for PI presence did not alter this finding, $r = .44$, $p < .001$. Age was not associated with any other test variables.

Using Wilk's lambda, a MANOVA revealed that there were no significant gender differences among the Taekwondo practitioners on any of the test variables, $\Lambda = .98$, $F(6, 47) = .13$, $p = .991$, $\eta^2 = .02$. Specifically, there was no effect of gender on self-esteem, body image, overall physical and mental health ratings, or on perceived influence of Taekwondo on physical and mental health. Thus, gender was excluded from further analyses. Due to the small number of participants in the different ethnic subgroups in the sample, it was not feasible to determine whether participants' ethnicity affected any of the test variables.³

Self-esteem and body image

The descriptive statistics for self-esteem, body image, overall mental and physical health, and Taekwondo's influence on mental and physical health are displayed in Table 2.

Table 2. Descriptive Statistics for Health and Self-Concept Variables

Variable	Min	Max	M	S.D.
Body Image	2	6	4.07	.94
Self-Esteem	1.7	4	3.24	.56
Infl.: PH	3	6	5.06	.96
Infl.: MH	3	6	5.15	.90
MH	1	6	4.77	1.05
PH	2	6	4.72	0.86

Note. Infl. = influence. PH = physical health. MH = mental health.

As predicted, a Pearson's correlation revealed that years of Taekwondo experience were positively correlated with scores on the Rosenberg Self-Esteem Scale, $r = .31$, $p = .020$. The association remained significant even after controlling for age, $r = .32$, $p = .018$. Also consistent with the hypothesis, a positive correlation occurred between Body Image Satisfaction scores and years of Taekwondo experience, $r = .30$, $p = .025$.

Thus, individuals with more Taekwondo experience reported higher levels of self-esteem and rated their body image more positively than did participants with less experience, providing support for our hypothesis. Contrary to expectations, however, self-esteem and body image were only marginally correlated with one another, $r = .24$, $p = .074$.

Physical and mental health

Contrary to predictions, a partial correlation controlling for PI presence revealed that Taekwondo experience was only marginally correlated with participants' ratings of their overall mental health, $r = .25$, $p = .066$, and was not associated with participants' ratings of their overall physical health, $r = .22$, $p = .110$.

Also contrary to predictions, Taekwondo experience was not significantly correlated with a stronger belief that Taekwondo influences mental health, $r = .17$, $p = .224$. However, as predicted, the longer participants had been training in Taekwondo, the more they believed it be influential on their physical health, $r = .28$, $p = .043$.

Controlling for age did not alter any of the findings. Specifically, years of Taekwondo experience remained significantly associated with a stronger belief that Taekwondo experience impacted physical health, $r = .28$, $p = .044$, and remained uncorrelated with beliefs that such experience impacted mental health, $r = .17$, $p = .241$. Overall mental health ratings remained marginally correlated with years of Taekwondo experience, $r = .27$, $p = .06$. Thus, participants with more Taekwondo experience did not rate their overall mental health more positively, nor did they hold stronger beliefs that Taekwondo had exerted an influence on their mental health. However, although the length of time participants had been involved in Taekwondo was not associated with more positive overall physical health ratings, it was associated with a stronger belief that Taekwondo was influential on their physical health.

2. Reasons for Taekwondo Participation

Each theme is discussed in terms of how frequently it was used throughout the sample and described in detail below, including excerpts from participants' responses.

Frequencies of themes

A within-subjects analysis of variance (ANOVA) revealed a difference in the sum of subthemes across the sample, $F(3, 168) = 8.58$, $p < .001$, $\eta^2 = .12$. Participants reported a significantly greater number of Physical Motivations ($M = 1.10$, $SD = .73$) than Enduring Psychological Motivations ($M = .44$, $SD = .73$), $p = .001$, 95% CI [.26, 1.03] and Social Motivations ($M = .49$, $SD = .76$), $p < .001$, 95% CI [.26, .94]. State Psychological Motivations ($M = .77$, $SD = .73$) did not differ significantly from any other themes.

Themes associated with Taekwondo experience

A Pearson's correlation revealed that the amount of Taekwondo experience participants had was positively associated with the number of enduring psychological motivations they reported, $r = .32$, $p = .017$. That is, as experience increased, so did perceived enduring psychological benefits of training. Years of Taekwondo experience was not significantly associated with state psychological, physical, or social motivations.

An overview of the themes.

Physical motivations.

As the most frequently cited theme across the sample, many participants reported engaging in Taekwondo for exercise, physical conditioning, and to improve health. For instance, participants often viewed Taekwondo as an efficacious and enjoyable form of exercise. Practitioners frequently reported statements such as, "I felt Taekwondo is good for me to keep myself active, flexible. I'm so excited to come to class regularly and follow the instructions in Taekwondo", and "I need to get/stay in shape. This experience has vastly improved my fitness and mental aptitude."

Aside from being conceptualized as a form of exercise, Taekwondo was perceived as an effective form of self-defense, with participants reporting statements such as, "I used to get

bullied a lot. So self-defense is always something I wanted to know.” Additionally, some reported that they desired to learn a new skill, stating that Taekwondo provided them with a way to challenge themselves or achieve a goal. For instance, one participant noted: “As a veteran triathlete and 50-something, the flexibility and discipline is a definite addition to my training. Having a new challenge is a very interesting thing at my point in life.”

State psychological motivations.

Participants perceived Taekwondo as a way to relieve stress, reduce anxiety, or relax, reporting that “[Taekwondo] helps me to de-stress,” and “it helps me deal with stress and anxiety.” Participants also reported improvements in their wellbeing and mood and reported feeling “better after leaving Taekwondo.” Relatedly, others discussed liking, being drawn to, or being able to “see the beauty of the art”. One participant stated that “[Taekwondo is] the only exercise I enjoy.” Some conceptualized Taekwondo participation as a means for avoiding boredom, reporting that it gave them “some place to go.”

Social motivations.

Many participants discussed family involvement in Taekwondo. Practitioners frequently reported that they had first enrolled their children in the sport, and later decided to begin training. Many viewed Taekwondo as a family activity or as a bonding experience: “I started because my son also does Taekwondo...I could relate more to my son by sharing the experiences.” Other participants reported that they liked the social engagement they experienced during their training classes, and discussed the friendships they had developed with other students. Participants frequently reported that they enjoyed both the “comradery” and the “group experience.” Relatedly, some enjoyed sharing their experience by teaching newer students, and others reported that they had “tremendous respect” for their teacher, and felt “privileged to study under his tutoring and mentoring.”

Enduring psychological motivations.

Although this was not the most frequently cited theme by the sample as a whole, it is worth noting that this category alone was used more frequently by more advanced practitioners. The longer a participant had been training in Taekwondo, the greater number of subthemes they reported from this theme. Some participants reported viewing Taekwondo as a means to increase focus and discipline. Others believed that it impacted morality and helped them to increase their respect for themselves and for others. Participants reported statements such as “[Taekwondo] has taught me respect for myself and for others, humility, patience, and inner strength as well as outer strength.” Taekwondo was also associated with improved confidence. For example, one participant reported, “I participate [in Taekwondo] because it gives me more confidence in daily life.”

A small number of participants reported that they had come to conceptualize Taekwondo as a way of life. These responses are notable in that they seemed to reflect a sincere belief that this sport had become a valuable component of these participants’ identities and exerted a strong influence on the ways in which they viewed themselves. Participants discussed how Taekwondo participation had “shaped” areas of their lives. They described the active role it

played in their lifestyles, such as giving them a “sense of purpose.” For these practitioners, Taekwondo was perceived as providing “discipline and principles to life.” It was portrayed as an integral part of themselves: “Taekwondo makes me a better me, and without Taekwondo my life was worthless. I learned that for me life is Taekwondo, and Taekwondo is life.”

IV. Discussion

In addition to providing converging evidence with previous research, the present study extends the literature in the domain of martial arts. As predicted, higher levels of self-esteem were positively associated with Taekwondo experience. This result adds to previous findings of enhanced self-esteem in martial artists, extending them to include a more representative sample of adult Taekwondo students in terms of age and gender.

Moreover, this finding is interesting when considered in conjunction with the qualitative results of this study and with the Exercise Self-Esteem Model. Many practitioners reported that they participated in Taekwondo to challenge themselves mentally or physically, to learn new skills, or to work towards achieving a goal. Additionally, practitioners frequently reported that Taekwondo aided in increasing energy, improving flexibility, learning self-defense, increasing strength, and facilitating weight loss. Many of these responses fall into the physical self-worth subdomains of strength, conditioning, body attractiveness, and sports competency, which are thought to ultimately generalize to increases in global self-esteem.

Secondly, this study represents one of the first empirical examinations of body image in the context of martial arts. The results demonstrate support for our hypotheses, and add to previous evidence showing that various forms of exercise can have a positive impact on body image perceptions (Hausenblas & Fallon, 2006; Hös, 2005; Taspinar et al., 2013). Unexpectedly, however, body image perceptions were not significantly correlated with self-esteem levels. This finding could potentially be interpreted within hierarchical structure of the Exercise Self-Esteem Model. If body image perceptions fall closer to the base of the model (i.e., the subdomain of body attractiveness), they might be expected to change at a faster rate than global self-esteem, which may have resulted in a non-linear relationship between these two variables.

Another novel finding of the present study is that, consistent with our hypotheses, the longer practitioners had been training in Taekwondo, the greater impact they felt it had on their physical health. Curiously, despite reporting a stronger belief that Taekwondo had an impact on physical health, these more experienced practitioners did not provide more positive overall physical health ratings than less experienced martial artists. One possible explanation for this disparity is that in order to become involved in a physically demanding sport such as Taekwondo, one might believe him or herself to be physically healthy. Thus, ceiling effects might have occurred for this question.

Our hypotheses that Taekwondo experience would be associated with more positive overall mental health ratings and an increased perceived impact on mental health were not supported. Taekwondo experience only correlated marginally with overall mental health ratings, albeit in the expected direction. However, the qualitative results provide a potential explanation for the non-significant correlations between mental health and Taekwondo

experience. Practitioners did indeed report psychological benefits from training, both transient and enduring in nature, in their open-ended responses. It might be that a more nuanced relationship exists between Taekwondo and mental health. In other words, distinct types of mental health benefits might be more likely to affect practitioners at different points of their training.

Decreases in stress and anxiety, along with increases in psychological wellbeing, feelings of happiness, and improved state of mind, may be immediately apparent when practitioners begin training. In some cases, these may serve as initial motivation for beginning Taekwondo. On the other hand, the enduring psychological motivations reported by participants often referenced more stable characteristics, ones which they believed Taekwondo had helped them to develop. Improvements in areas such as confidence, focus, and discipline likely take longer to accrue. This may also explain why Enduring Psychological Motivations was the only qualitative theme more likely to be reported by the more experienced practitioners.

The qualitative results also suggest that the traditional conceptualizations of martial arts as a lifestyle are reflected in modern practice. Consistent with previous research that some practitioners come to view martial arts as a spiritual practice (Twemlow, Lerma & Twemlow, 1996), and as a means for character development (Lantz, 2002), participants discussed how Taekwondo had enhanced their moral character in ways such as increased respect for themselves and for other people. Others believed that Taekwondo had become a way of life, a factor that had shaped important aspects of their lives, or a guiding principle in their development as human beings.

Limitations and Implications for Future Research

Limitations

The present study has some limitations that must be taken into consideration when interpreting these findings. Firstly, no causal conclusions can be drawn from the present results due to the correlational study design. Moreover, since a comparison group was not used, it is not possible to determine whether the results of this study are unique to Taekwondo training, or if they are benefits of exercise in general.

Secondly, as has been noted in previous martial arts research (Konzak & Boudreau, 1984), practitioners who reach high levels of training may already possess high levels of qualities such as self-esteem and positive perceptions of their health and body image, thus enabling them to strive for success and overcome obstacles in their training. For instance, those with lower levels of self-esteem may not feel they are capable of mastering an increasingly challenging curriculum and may drop out before reaching an advanced level. Thus, the linear relationships observed in this study might be a byproduct of individual differences rather than a function of Taekwondo training.

Additionally, all of the participants in the present study were members of the same large Taekwondo organization. In some ways, this contributes to the strength of the study. It allowed for a more consistent training background and guaranteed that participants were involved in a martial arts program that incorporated traditional Taekwondo philosophy into its curriculum. However, this limits the generalizability of the results, and it cannot be concluded that these findings would extend to all Taekwondo styles and teaching philosophies. That being said,

including 11 separate locations in the study somewhat attenuates this issue. If, for instance, data was collected from a single location, it would not be possible to determine whether any effects were a function of the sport, the training style, or as a function of the individual instructor.

Secondly, due to the accessibility of the sample and the importance of selecting an organization that encompassed traditional Taekwondo philosophies, the sample was recruited from the PI's organization of employment. Some participants were known personally by the PI, including 1 relative. This may have influenced participants' responses. However, all participants were blind to the purpose of the study, and with locations spread across a large geographic region, the majority of the participants had never met the PI prior to the study.

On the other hand, selecting a sample that shared some degree of connections with the PI may have resulted in a greater likelihood of obtaining authentic responses. Participants may have been more motivated to provide accurate, thoughtful responses due to the PI's role in their organization. Evidence for this possibility is reflected in the potency of many of the open-ended responses. Finally, the utilization of anonymous questionnaires and an independent rater for the open-ended data helped to control for bias in interpreting the results.

Implications for future research.

An unanticipated finding emerged from the data analysis and points to an intriguing avenue for future research. Specifically, self-esteem, overall mental health ratings, and the perceived influence of Taekwondo on mental and physical health increased with age. The finding that mental health ratings positively increased with age is consistent with longitudinal research showing that psychological health increases steadily from age 30-60 (Jones & Meredith, 2000). Similarly, previous studies have shown that self-esteem tends to increase gradually throughout adulthood before beginning to decline later in life (ages 60-80; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). However, this study demonstrates that the relationship between Taekwondo training and increased self-esteem is independent from the one observed between age and self-esteem: even when accounting for age, years of Taekwondo experience remained positively associated with self-esteem ratings.

Moreover, the perceived influence of Taekwondo on mental and physical health increased with age. Years of Taekwondo experience were also associated with a greater perceived impact on physical health and this relationship appeared to function independently of age. On the other hand, the belief that Taekwondo influenced mental health was observed only in older practitioners and was not associated with years of experience. This suggests that there may be unique mental health benefits associated with Taekwondo practice in middle-age. Indeed, this is consistent with previous work showing that years of martial arts training were associated negatively with depressive symptoms, and positively with life satisfaction in men aged 40-75 (Walther, Lacker, & Ehlert, 2018).

It would be valuable to explore whether these and other benefits extend to older adults. As Taekwondo experience was associated with increased self-esteem, it may serve as a protective factor against declining self-esteem (Robins et al., 2002) in older adulthood. For instance, Taekwondo competitions include age categories for adults upwards of 60 years-old at nationwide and international events (USA Taekwondo, 2016), providing potentially unique,

meaningful, and rewarding experiences for older individuals that may lead to increases in self-esteem. Moreover, previous research has demonstrated that Tai Chi interventions lead to increased self-esteem for elderly individuals (Lee et al., 2010; Li et al., 2002).

Future research should focus on middle-aged and older adults involved in Taekwondo, as this form of exercise may be especially beneficial for adults who fall into these age groups. This may be an important area of future research and has not yet been thoroughly explored. Qualitative studies may be especially valuable for gaining deeper insight into why the perceived influence of Taekwondo on mental and physical health increases with age.

V. Conclusion

Importantly, the results of the present study may have implications for therapeutic research. Researchers have documented the efficacy of exercise for improving self-esteem in clinical populations (Bosscher, 1993; Hutchinson, Skrinar, & Cross, 1999). Additionally, as demonstrated by the broad age-range of the present sample, Taekwondo is a form of exercise that can be, and is commonly, practiced by adults of all ages. This contributes to its viability as a candidate for an exercise-based therapeutic intervention as it could be employed in diverse populations.

Weiser and colleagues (1995) proposed that parallels exist between the martial arts and psychotherapy, and suggested that they may be effectively used in conjunction with one another. Some of the dynamics that exist in a well-run martial arts school parallel those of a therapy group. The participants interact with each other, work towards overcoming obstacles together and help to facilitate change and growth in one another (Weiser et al., 1995). These characteristics echo the sense of comradery and increased familial bonding reported by participants in the present study.

The psychological benefits reported by participants in the current study, such as stress reduction, improvements in confidence and in wellbeing, are often targets of clinical interventions. Indeed, Weiser and colleagues (1995) suggested that martial arts training can teach practitioners to relax, to focus, and to become both self-aware and self-accepting while still striving for improvement, enhancing self-esteem and self-confidence.

Overall, the results of the present study provide suggestive findings for development of such a therapeutic intervention. This is even more apparent when taken in conjunction with past work demonstrating increased relaxation, emotional stability (Konzak & Boudreau, 1984), lower levels of anxiety (Kurian & Caterino, 1993), and more effective coping strategies for dealing with stress (Petrovic, 2017) in martial artists.

In summary, this study provides preliminary evidence for Taekwondo's positive effects on wellbeing through increased self-esteem and positive body image perceptions. Moreover, the guiding principles of Taekwondo were largely represented in the qualitative results of this study, suggesting that modern-day practice is imbued with the spirit and philosophies of traditional Taekwondo.

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