

# A systematic review on the application of Aikido as a psychosomatic tool in therapeutic setting (Part II)

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## Summary

It is our contention that Aikido may have sufficient support for its use in complementary therapies in the field of clinical treatment. However, as far as we are aware, no extensive scientific studies highlighting the application of Aikido as a psychosomatic therapy in the field of psychological behavioural disorders has been carried out. Our aim here was to conduct a systematic review of scientific studies associated with the possible psychosomatic benefits of Aikido practice and to examine whether there is any theoretical basis for this psychosomatic health connection. In terms of methodology, a systematic review of published scientific literature on health and Aikido was conducted in adherence with PRISMA guidelines. Three aspects of the application of Aikido were identified, one corresponding to phases more susceptible to psycho-emotional instability such as during the period of adolescence; another aspect related to the treatment of overcoming trauma in subjects with post-traumatic stress disorder and the final aspect related to the improvements as a result of the practical intervention of mindfulness. It is evident from our review, that the treatment of Aikido as a discipline with psychotherapeutic potential requires further expert analysis from a cross-disciplinary and interdisciplinary perspective, which would involve establishing a suitable intervention model in order to attain a deeper understanding of the discipline of Aikido. Moreover, a mastery of the field of psychology and psychiatry is required to understand the internal cognitive processes of the subjects studied.

## Key words:

Proprioception. Mindfulness. Martial arts. Complementary therapy. Health. Well-being.

## Una revisión sistemática sobre la aplicación del Aikido como una herramienta psicósomática en sectores terapéuticos (Parte II)

### Resumen

Hasta donde tenemos conocimiento no existe un campo de carácter científico extenso de la aplicación terapéutica de relación psicósomática en el Aikido, en el entorno de los trastornos y afecciones psicológicas del comportamiento. Partimos de la hipótesis de que el Aikido podría tener un respaldo suficiente en su uso en terapias complementarias al ámbito de los tratamientos clínicos. Nuestra finalidad fue realizar una revisión sistemática sobre los estudios de carácter científico asociados a los posibles beneficios psicósomáticos de la práctica del Aikido y comprobar si hay una teoría entre esta conexión de salud psicósomática. Metodológicamente se realizó una revisión sistemática de la literatura científica publicada en materia de salud y Aikido. Para su elaboración se han seguido las directrices de la declaración PRISMA. Se observan tres vertientes de aplicación del Aikido, una correspondiente a fases más susceptibles de inestabilidad psicoemocional como es la adolescencia. Otra vertiente relacionada con el tratamiento de superación de traumas en sujetos con trastorno por estrés postraumático y una última relacionada con la mejora de los aspectos relacionado con la intervención práctica de mindfulness. Se evidencia que el tratamiento del Aikido como una disciplina con potencial psicoterapéutico que requiere de un mayor análisis de expertos desde una perspectiva transdisciplinar e interdisciplinar, que permita encontrar un modelo de intervención idóneo para tener un conocimiento más profundo de la disciplina del Aikido. Además, se requiere un dominio del campo de la psicología y de la psiquiatría que permita entender los procesos cognitivos internos de los sujetos estudiados.

## Palabras clave:

Propiocepción. Mindfulness. Artes marciales. Terapia complementaria. Salud. Bienestar

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## Discussion

Aikido as a contemporary Martial Art of the 20<sup>th</sup> century spread to the West when Morihei Ueshiba decided in 1966 to send his disciples to spread his teachings beyond Japan's borders. This is the case of Mitsumisi Yoshimitsu Yamada (Tokyo, 1938), Mitsunari Kanai (Manchuoko, 1938-Toronto, 2004) in the United States, Masamichi Noro (Aomori, 1935 - Paris, 2013) in France and Nobuyoshi Tamura (Osaka, 1933 - Trets, 2010) in Germany. The first bibliographical reference reflecting on the psychotherapeutic benefits of Aikido was written by Saposnek in 1980<sup>6</sup>. Fuller in 1988<sup>5</sup>. The reference carried a note that clinical and psychotherapeutic applications are in an emerging phase and highlights the psychological characteristics of the Art of Aikido considering the possible uses of the principles of this Martial Art as a systemic or indeed, complementary therapy. This view was previously obscured during the 1960's and 1970's mainly due to the use of Martial Arts in the film industry. The film industry model, spearheaded mainly by Bruce Lee (1940-1973), along with its' philosophy and openness to the West on the Zen foundations of the Martial Arts<sup>30</sup>, contributed to the distortion in interpreting the spiritual and ethical foundations of the Martial Arts<sup>5</sup>.

It was Delva-Tauillili in 1995<sup>22</sup> who wrote the first quasi-experimental article on the benefits of Aikido and this was published in the field of psychology. Although, hitherto, Madenlian in 1979<sup>31</sup>, published the first study to analyse a treatment programme involving Aikido on pre-adolescent boys with behavioural problems and self-concept. This article

was excluded from this systematic review as it was published as a chapter in the same year. In any case, the purpose of Delva-Tauillili's<sup>22</sup> article was to test whether the practice of Aikido reduced aggressive behaviour in pre-adolescents in a secondary school in Honolulu (Hawaii-USA). More recently, similar research in the field of psychology was carried out by Foster in 1997<sup>23</sup> in Wichita (Kansas-USA), by Lothes II, Hakan, & Kassab in 2013<sup>24</sup> in Wilmington (North Carolina-USA), by Weiss *et al.* in 2017<sup>26</sup> in Cincinnati (Ohio-USA). It is only very recently that for the first time the interest in Aikido at a scientific level has developed beyond the borders of the USA, and where we find studies, all of which were published in 2019, by Cuellar, Bazán & Araya<sup>25</sup> in San José (Costa Rica), by Szabolcs, Szabo & Köteles<sup>27</sup> in Budapest (Hungary) and by Ben-Soussan *et al.*<sup>28</sup> in Rome (Italy). From this year of publications, we only find continuity in the team of Szabolcs *et al.*<sup>29</sup> when in 2021 they published an article with the aim of studying aspects such as spirituality, mindfulness, body awareness, and self-compassion in healthy individuals, through Aikido (Table 3). Possibly the expansion of the influence of Aikido as a Japanese 'product' in North America is due not only to the 'evangelisation' of Aikido by Morihei Ueshiba's disciples, but also to the migration of Japanese citizens to the USA, where the island of Hawaii became an intermediate step to reach the North American continent<sup>32</sup>.

Still, Aikido as a research practice is also relevant to the somatic domain with a focus on aspects of Mindfulness<sup>24,25,28,29</sup> or flow experience<sup>27</sup> (Table 2). The aspects highlighted in the origin of Buddhism constitute an authentic part of the Zen spirit<sup>33</sup>. This trajectory centred on a type

**Table 2. Descriptive data.**

	<b>Authors (Year)</b>	<b>Title</b>	<b>DOI</b>	<b>Journal</b>	<b>Location*</b>
1	Jorge Delva-Tauillili (1995)	Does brief Aikido training reduce aggression of youth?	10.2466/pms.1995.80.1.29	Perceptual and Motor Skill 80:297-298	Hawaii, Honolulu (USA)
2	Yumi Akuzawa Foster (1997)	Brief Aikido training versus karate and golf training And university students' scores on self-esteem, anxiety, and expression of anger	10.2466/pms.1997.84.2.609	Perceptual and Motor Skills 84:609-610	Wichita, Kansas (USA)
3	John Lothes II, Robert Hakan, Karin Kassab (2013)	Aikido Experience and its Relation to Mindfulness: A Two-Part Study	10.2466/22.23.PMS.116.1.30-39	Perceptual & Motor Skills: Learning & Memory 116(1):30-39	Wilmington, North Carolina (USA)
4	Tobias C. Weiss, Benjamin D. Dickstein, Joseph E. Hansel, Jeremiah A.Schumm, Kathleen M. Chard (2017)	Aikido as an Augment to Residential Posttraumatic Stress Disorder Treatment	10.1037/mil0000194	Military Psychology, 29(6):615-622	Cincinnati, Ohio (USA)
5	Rodrigo Cuéllar Hidalgo, Aldo Bazán Ramírez, Gerardo Alonso Araya Vargas (2019)	Effects of Aikido practicing on mindfulness and anxiety in Costa Rican university students	10.47197/retos.v0i35.62044	Retos 35:13-19	San José (Costa Rica)
6	Zsuzsanna Szabolcs, Attila Szabo, Ferenc Köteles (2019)	Acute psychological effects of Aikido training	10.33607/bjshs.v11i2i1.778	Baltic Journal of Sport & Health Science. 1(112): 42-49	Budapest (Hungaria)
7	Tal Dotan Ben-Soussan, Joseph Glicksohn, Antonio De Fano, Federica Mauro, Fabio Marson,Manuela Modica, Caterina Pesce (2019)	Embodied time: Time production in advanced Quadrato and Aikido practitioners	10.1002/pchj.266	Psychology Journal 8:8-16	Roma (Italy)
8	Zsuzsanna Szabolcs, Barbara Csala, Attila Szabo, Ferenc Köteles (2021)	Psychological aspects of three movement forms of Eastern origin: a comparative study of Aikido, Judo and Yoga	10.1080/11745398.2020.1843507	Annals of Leisure Research 1-21	Budapest (Hungaria)

\*Location of the Research Group from which the interest in carrying out a quasi-experimental analysis on the analysis of psychological variables in Aikido has arisen.

of attitude towards life seems to stand out in the results obtained in relation to the contributions of Aikido to psychological health. There are also more specific clinical applications on aspects that influence the emotional state such as self-esteem as well as the level of anger and anxiety<sup>24</sup>, or its effect on aggressiveness<sup>22</sup>. According to Fuller in 1988<sup>5</sup>, the strategies used in Aikido for the management of certain problematic states such as anger control, could help to provide alternative or additional ways of working with subjects with temper control difficulties. The findings from the use of Aikido as a continuous therapy applied over a period of two years to individuals diagnosed with PTSD<sup>26</sup>, provide evidence of significant positive effect. In this case the aim was to support symptoms as a whole, because of stress inoculation as a result of PTSD. Hourani *et al.*<sup>13</sup> previously applied training programmes using Aikido to US military marines in order to acquire emotional management strategies in stressful situations.

In this type of analysis of the psychosomatic relationship in Aikido and its possible benefits as a therapy to help population groups with or without diagnosis, it is complex to draw conclusions about the influence of Aikido on human behaviour. In this sense, it is worth noting first that the creation of specific programmes in order to apply both strategies, resources and teachings of Aikido as we have found in the review conducted was not validated by external experts. Despite this, three research projects<sup>22,25,26</sup> were considered as particularly significant. These studies are the only ones found in the scientific literature on intervention programmes through Aikido applied to diverse population groups outside the regulated regime of this Martial Art. Our findings show 21 pre-adolescent island boys between 9 and 12 years old<sup>22</sup>, 98 war veterans, 52 males with an average age of 52.06 + 10.39 and 46 females with an average age of 46.61 + 8.24 (Weiss *et al.*, 2017). And, in a final instance, 12 adults (10 males, 2 females) of varied age range between 18 and 62 years with a mean age of 28.67 + 12.43 (Table 3)<sup>25</sup>. In total since the first publication, 83 subjects (males) and 48 (females) outside the field of Aikido have experimented in their first contact with this discipline to test its effects. In the case of Tauilli's study<sup>22</sup> where the sample was Pacific Islander pre-adolescents, emotional regulation skills were analysed, that is, giving an appropriate response to the emotions that we experience in each situation; such as, tolerance to frustration, the degree of self-control and in general, the management of aggressive behaviour. Moon<sup>34</sup> refers to Aikido as a discipline which is suitable for neutralising and integrating the attacker and as having the potential ability to handle physical violence. In other words, it neutralises and harmlessly redirects the attacker's aggression.

Weiss *et al.*<sup>26</sup> examined whether Aikido as part of the treatment of war veterans improved symptoms associated with PTSD, such as flashbacks, nightmares, severe distress and uncontrollable thoughts about a witnessed or experienced traumatic situation. In the study by Weiss *et al.*<sup>26</sup> the depression factor, a mental as well as an emotional disorder, was treated as a collateral factor of PTSD. With regard to the study of adults in the university population by Cuellar, Bazán & Araya<sup>25</sup>, the positive changes that were perceived as a result of the practice of Aikido were on mindfulness (psychic and somatic component) and the state of anxiety (Table 4). It is necessary to point out here that Morihei Ueshiba's philosophy, in its purest form, stems from the psychosomatic relationship of Aikido with the opponent. This philosophy projects a

system of interaction between two human beings in which a maxim of his *budo*, "love reconciliation", seems to be the essential axis of his work<sup>35</sup>. This maxim in any case speaks of forgiveness, compassion for the other or self-compassion, as characteristics rooted in both Eastern philosophy and spirituality<sup>29</sup>. Such was Morihei Ueshiba's wish, Aikido as a vehicle of protection for the whole world, with love replacing harm and indeed, death<sup>35</sup>. Accordingly, there is no doubt that this system of interaction in Aikido would embody, as a starting hypothesis, a therapeutic healing effect.

On the other hand, in the context of Aikido schools, we found a study population of 20 initiates<sup>23</sup>, where the rank, gender or age of the participants is not specified. Subsequently, Lothes *et al.*<sup>24</sup> collected data in a first study of a sample of 159 aikidokas belonging to the US territory, distinguishing (111 males and 49 females). Lothes *et al.*<sup>24</sup> found 86 subjects below black belt or *Kyu ranks*, (60 males & 26 females) and 53 with black belt rank (males & females). In a second study they recruited 12 aikidokas (9 males & 3 females) although in both studies they do not specify the age of these participants. Szabolcs *et al.*<sup>27</sup>, meanwhile, recruited 53 adults of mean age 37.2 + 10.56 (45 males & 8 females), of whom 27 subjects were below black belt, and 26 above black belt. Ben-Sousan *et al.*<sup>28</sup> collected data from 11 adult Aikido practitioners of mean age 47.8 + 12.04 (4 males & 7 females) without knowing the rank, nor the years of training. Finally Szabolcs *et al.*<sup>29</sup> were able to recruit 121 adult aikidokas with a mean age of 37.26 + 10.72 (99 males & 21 females). A total of 247 aikidoka have been questioned since 1997 and 227 since 2013 in the last decade where interest in studying aikidoka personality traits has grown. Most of the studies make a comparison with control groups of the same age not included in the programme<sup>22</sup>, with healthy people chosen from another field<sup>24</sup>, or with other practitioners of other sports<sup>23</sup>. We can observe control groups that are very unbalanced in number with those analysed on the basis of the practice of Aikido, such as that of Lothes II *et al.*<sup>24</sup> in their first study.

Regardless of whether the sample of individuals is drawn from practice schools<sup>23,24,27-29</sup>, or if the training programme was implemented in a different setting than usual<sup>22,25,26</sup>, the questionnaire tool seems to have facilitated greater consistency in the sample size studied, whether online<sup>24</sup> or on-site<sup>27</sup>. In any case, there is an interest in studying the influence on interpersonal psychological behaviour through Aikido as an internal conflict resolution tool. First of all, it can be seen in terms of a phase or stage considered as being particularly conflictive in human beings, such as in adolescence. During adolescence, conflict is considered adaptive, as conflictual interactions have a relational developmental purpose between children and parents<sup>36</sup>. In the study of Pacific Islander pre-adolescents, the aim is to analyse certain variables of emotional regulation by these children in order to see if they are able to improve them<sup>23</sup>. Secondly, in a separate study, Aikido is used as part of a treatment for those diagnosed with PTSD, and the association with depression as the most characteristic trait of ex-war veterans<sup>26</sup> (Table 3).

Internal conflict is the origin of behavioural traits such as low frustration tolerance, high irritability, high irascibility, poor control of aggression or anxiety and poor management of these states<sup>22,25,26</sup>. These traits are related to a lack of self-esteem and self-confidence<sup>23,24</sup> (Table 4). Because Aikido harnesses the natural abilities of being human, it offers an immediate sense of empowerment to beginners, which can enhance

Table 3. Objectives and methodologies.

Authors (Year)	Objective	Sample	Design	Intervention*
1 Delva-Tauiiili (1995)	To examine whether the practice of Aikido, a non-violent Japanese martial art, effectively reduces aggressive behaviour of preadolescent youth	42 Male Preadolescent Youth, Asian and Pacific Islanders aged 9-12 years (Experimental group: 21 subjects; Control group of 21 subjects on waiting list)	Pre-test and post-test mean scores were performed and compared between the control and experimental groups, before and after 2 weeks of daily training from Monday to Friday	Training on the Basic Principles of Aikido with a methodological structure adapted in the school for pre-adolescents
2 Foster (1997)	To investigate if Aikido training is effective in improving selected aspects of personality	69 volunteers were university physical education students from Ohio State University and Stanford University. The 4 initiation groups were divided into three modalities: experimental group of 20 Aikido initiates, 24 karate initiates, 13 golf initiates. There was also a control group of 12 golf initiates	Pre-test and post-test of the means of the variables were carried out over a period of 10 weeks of training	Aikido initiation course in the University context
3 Lothes II, Hakan, & Kassab (2013)	To examine the potential association of training in Aikido may have on mindfulness	179 adult participants over 18 years of age were recruited via email and online. Study I: Experimental group: 159 participants (111 male, 48 female) Aikido students. Control group: 20 participants (4 male, 16 female) psychology students with no martial arts experience. Study II: Experimental group: 12 volunteer Aikido practitioners (3 females, 9 males). Control group: 20 psychology students (13 females, 7 males)	Study I: A cross-sectional data collection for the questionnaires for each subject was carried out online. It took 5 months to collect the 159 surveys and the levels of experience were compared with the ranks acquired and the length of practice experience  Study II: Longitudinal design of the experimental group with a control group	Study I: There was no training programme designed ex-profeso within the context of Aikido schools in the USA.  Study II: A design was made to insert Mindfulness practices during their Aikido training
4 Weiss <i>et al.</i> (2017)	To examine the effects of augmenting an evidenced-based residential Posttraumatic Stress Disorder (PTSD) treatment program for veterans with group-based instruction in Aikido	193 Former Vietnam War veterans (108 men/85 women) receiving residential treatment for Post-Traumatic Stress Disorder at a Midwest Veterans Affairs Medical Center. Cognitive processing therapy was part of their primary treatment	Quasi-experimental cohort design with a 7-week follow-up for an overall duration of 52 months. Measurement cohorts were applied to both groups of 85 women and 108 men assigned to practise Aikido and non-Aikido in such programmes	Specially designed programme as complementary therapeutic treatment for war veterans
5 Cuéllar, Bazán & Araya (2019)	To examine the effect of practising Aikido on mindfulness and anxiety state in university students with no previous experience in martial arts	24 students from the University of Costa Rica. The experimental group consisted of 12 students from different careers (10 males and 2 females; ages 18-62 years); and the control group consisted of 12 students from the Bachelor in Human Movement Sciences (9 males and 3 females; ages 21-34 years)	Quasi-experimental design, with pre- and post-treatment measurements, with one experimental group and one active control group. Implementation programme based on an 11-week training programme (two weekly sessions of 2 hours each).	Specially designed programme in a context outside of Aikido schools
6 Szabolcs, & Szabo, Köteles (2019)	To examine for the first time the hypothesis that Aikido training, like many other western forms of organised physical activities, has acute psychological benefits as manifested via favourable changes in affect and the flow experience	53 participants were recruited from Aikido clubs of the Aikido Foundation in the metropolitan area of Budapest aged 18-57 years (85% male-15% female). who practised Aikido as a regular recreational activity	Cohort design at least 3 surveys data collections were conducted for one of the variables and another at least 1 time	The programme included the Aikido sports schools' own training sessions
7 Ben-Soussan <i>et al.</i> (2019)	To examine the effect of Mindful Movements (MMs-specific types of mind-body coordination-demanding physical activity) on Time Perception (TP)	34 healthy adults volunteered, including 11 practitioners of Aikido (4 males and 7 females) and 9 practitioners of advanced <i>Quadrato</i> Motor Training (4 males and 5 females) and 14 physically inactive controls (7 males and 7 females)	A mixed observational study	There was no specific design. They were collected directly from the Aikido Schools

(continue)

**Table 3. Objectives and methodologies (continuation).**

8	Szabolcs <i>et al.</i> (2021)	To examine four characteristics rooted in Eastern philosophy and religious practice, i.e spirituality, mindfulness, body awareness, and self-compassion in healthy individuals	Experimental group of 265 subjects (Aikido with n= 121, 18% female: average age 37+11 years; Yoga with 75, 84% female, average age 44+11 years)- Control group with 76 subjects, 67% female, average age 27 + 9 years old	Cross-sectional study collecting survey data via online questionnaires from subjects belonging to their own sports schools	There was no intervention programme or implementation in the design
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\*Context of Aikido intervention in this study based on the phases, exercises and fundamentals that are developed in its routines or training protocols.

self-esteem<sup>5</sup>. The interaction systems that incorporate the conflict itself during the confrontation, designs coping strategies according to some authors as a psychotherapeutic model with great healing potential<sup>35</sup>. Aikido has built-in resources and procedures for dealing with adaptive conflict in interpersonal combat with the other. We can describe as an example two types: the techniques called *Tai Sabaki*, a type of dodging based on moving away from the path of the attack just before impact in order to proceed to use this energy to redirect the conflict. Others, those of psychophysical preparation to face the conflict known as *Aiki Taiso*, based on breathing techniques and meditation. In this last group, the studies proceed to analyse the effects of Aikido training on psychological or mental variables such as mindfulness<sup>25</sup>, flow experience, skill-challenge harmony, oneness with the experience<sup>27</sup>. Time Perception Production<sup>28</sup>, assesses the importance, experience and beliefs of spiritual connection to an inner power, interpersonal energy, ultimate force, so it measures an aspect of spirituality<sup>29</sup> (Table 4).

Aikido, fundamentally based on this system of psychosomatic relationship with the other, as described earlier, is not only hypothesised to reduce and help aggressiveness, improve self-confidence or improve anxiety control and management, but seems to also establish a sensitive connection from the earthly to the spiritual and vice-versa. Moon<sup>34</sup> alludes to the words of O'Sensei or Morihei Ueshiba where he explains that victory at the expense of others is not true victory; the benefit lies in when your actions help to overcome the mental conflict in yourself. Moon<sup>34</sup> also points out to the meaning of *Aiki* not as a technique to fight or defeat the enemy, but as a way of reconciliation with oneself.

However, Delva-Tauiilili<sup>22</sup> found no significant differences between practitioners enrolled in an Aikido programme and the control group in terms of aggression and self-control variables. Foster<sup>23</sup> also found no significant differences between the pre-test and post-test in the Aikido group in terms of self-esteem, state anxiety, trait anxiety or anger expression. In this study the Karate group showed significantly lower means than the Aikido group on trait and state anxiety, and anger expression. In the same vein Lothes *et al.*<sup>24</sup> found no significant differences from the pre-test and post-test in the Aikido group, in relation to self-esteem, anxiety state, trait anxiety and anger expression. Even compared to the Karate group, the latter showed significantly lower means in trait anxiety. Anxiety is a predisposing factor for aggression. Aggression is channelled through releasing aggression or, on the contrary, other strategies have to be applied. Rohtpearl (1980)<sup>4</sup> based on an analysis of karatekas of different ranks, confirmed the cathartic and circular theories of aggression, so that the results where karatekas show lower levels of anxiety may be

due to this theory. Aggression is regarded as something to be treated in martial arts, especially in the use of Taekwondo<sup>37</sup>. Regardless of the age of the subjects, or whether or not they continuously practise Aikido in their lives, these findings<sup>22-24</sup> suggest that the anxiety-aggressiveness binomial requires other alternative or complementary therapeutic treatments to psychiatry, beyond the practice of Aikido (Table 4).

Contrastingly, we observed a lack of homogenisation of the protocols analysed in relation to the analysis of the independent variable, Aikido. The analysis of this Art requires approaching the developed senses of corporeality, embodiment and aesthetic pleasures in a somatic teaching felt by individuals<sup>12</sup>. It is necessary to observe the qualitative aspects of this evidence, in that in many occasions, teaching processes are not taken into account and integrated in understanding of the phenomenon at the individual level in order to experience real transformation<sup>38</sup>. It may be this lack of somatisation as integrated in the foundations established by Morihei Ueshiba that certain factors of emotional regulation have not reflected improvements in the studies of Delva-Tauiilili, Foster, and Lothes *et al.*<sup>22-24</sup>.

We must not forget that Morihei Ueshiba was a mystic with enlightening experiences like St. John of the Cross in the Christian tradition. Master Ueshiba focused on transmitting generationally using a key concept in Aikido: *kimusubi* which means "uniting oneself with one's partner". uniting your own ki with that of the other without fissures. *Aiki*, "gathering ki", is similar to *ki-musubi* but with more emphasis on the momentum and harmonisation of a conflicting force<sup>18</sup>. The essence of Morihei Ueshiba's work on the transcendence of the human being from the physical interaction of conflict and overcoming it through the Art of Aikido is the basis of healing. The expression 'loving reconciliation' is common in his terminology<sup>35</sup>. The influence of Shintoism or Buddhism and even *Mikkyo* seems to be present in the figure of Morihei Ueshiba. *Mikkyo*, considered to be the most mystical branch of Buddhism in addition to instruction in the teachings and practices of the tradition, involves and requires "*kanjo* empowerments" (initiatory power transmissions)<sup>39</sup>. Morihei Ueshiba uses 'transcendence' as the tool to aid healing. Transcendence was sought by Morihei Ueshiba on the basis that human beings naturally have a creative expansive potential to be developed, where they are capable of states beyond the physical<sup>40</sup>. This is based on subjective perceptual experiences that transcend certain states (*hypereo*). This concept in the world of arts and dance was interpreted by the choreographer Erick Hawkins, as the need to expand a core concept in movement work: "kinesthetic awareness". This is defined as the sensation of movement in a somatic connection of muscles, fascia

Table 4. Variables, scales of measurement and results.

Authors (Year)	Psychological, somatic, cognitive and emotional variables	Scales and measures	Relevant results	Conclusions
1 Delva-Tauiiili (1995)	<ul style="list-style-type: none"> <li>- Frustration tolerance</li> <li>- Problem behaviours</li> <li>- Self-control</li> <li>- Aggressive behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- Teacher's Self-control Rating Scale and on aggressive behaviour</li> <li>- Subscales of the Child Behaviour Rating Scale</li> </ul>	No significant differences were found in aggressive behaviour and self-control between the Aikido group and the control group	Methodological limitations such as the lack of randomisation in the groups and the short training time are not sufficient to have a significant effect
2 Foster (1997)	<ul style="list-style-type: none"> <li>- Self-esteem</li> <li>- State-anxiety</li> <li>- Anger</li> </ul>	<ul style="list-style-type: none"> <li>- Self-esteem Scale</li> <li>- State-trait Anxiety Inventory</li> <li>- Anger Expressions Scales from the State-Trait Anger Expression Inventory</li> </ul>	No significant differences were found between the pre-test and post-test in the Aikido group in terms of self-esteem, state anxiety, trait anxiety or anger expression. The Karate group showed significantly lower means on trait anxiety, state anxiety and anger expression	The subjects should be observed for several years of training to evaluate changes in test scores
3 Lothes II, Hakan, & Kassab (2013)	<ul style="list-style-type: none"> <li>- Mindfulness Skills</li> <li>- Mindfulness attention awareness</li> </ul>	<ul style="list-style-type: none"> <li>- Kentucky Inventory of Mindfulness</li> <li>- Skills and Mindfulness Attention Awareness Scale</li> </ul>	The results of both studies show significant increases in mindfulness scores with Aikido training	This kind of field of knowledge requires longitudinal designs and empirical research to progress further
4 Weiss <i>et al.</i> (2017)	<ul style="list-style-type: none"> <li>- Posttraumatic Stress Disorder (PTSD)</li> <li>- Depression symptom</li> </ul>	<ul style="list-style-type: none"> <li>- PTSD Checklist Stressor Specific Version (PCLS)</li> <li>- Clinician Administered PTSD-Scale (CAPS)</li> <li>- Beck Depression Inventory: Second Edition (BDI-II)</li> </ul>	Female veterans who received Aikido experienced a greater decrease in self-reported PTSD and depression symptoms during treatment. No benefits were found in men	The results of this study are affected by certain limitations such as not using a randomised design, which increases the risk of possible therapist and Aikido instructor effects. Furthermore, a better understanding of the mechanism underlying Aikido needs to be developed to help clinicians
5 Cuéllar, Bazán & Araya (2019)	<ul style="list-style-type: none"> <li>- Mindfulness</li> <li>- Psychic Component (PC) of anxiety</li> <li>- Somatic Component (SC) of anxiety</li> </ul>	<ul style="list-style-type: none"> <li>- Mindfulness Attention Awareness Scale (MAAS)</li> <li>- Hamilton Anxiety Scale (HAS)</li> </ul>	Positive effects of Aikido practice on mindfulness and anxiety status were evident. Overall, Aikido practice showed significant effects on mindfulness and anxiety PC and a significant and small effect on SC	The results show that practising Aikido, as might be the case with other martial arts, brings a benefit in mood that exceeds that which can be obtained from regular physical activity as part of an active lifestyle
6 Szabolcs, & Szabo, Köteles (2019)	<ul style="list-style-type: none"> <li>- Flow experience</li> <li>- Skill-challenge harmony</li> <li>- Oneness with the experience.</li> <li>- Positive affect and negative affect</li> </ul>	<ul style="list-style-type: none"> <li>- 10-item psychometrically validate Hungarian version of this instrument (PANAS-HU) based in The Positive Affect Negative Affect Scale (PANAS)</li> <li>- The Hungarian Flow State Questionnaire (FSQ): derived from several versions of the Flow State Scale (FSS)</li> </ul>	The flow experience in aikidokas is similar to aerobic or spinning exercise. More experienced aikidokas reported a higher skill-challenge harmony than less experienced martial artists	These findings reveal relatively clearly for the very first time in the literature that Aikido practice has acute, or immediate, psychological benefits similar to other martial arts and exercises
7 Ben-Soussan <i>et al.</i> (2019)	<ul style="list-style-type: none"> <li>- Time Production (TP): link bodily perception, human time perception and Mindfulness</li> <li>- Homolateral interlimb coordination</li> <li>- Creativity</li> </ul>	<ul style="list-style-type: none"> <li>- TP/Time-production task</li> <li>- Homolateral interlimb coordination task</li> <li>- Creativity Task (Alternate Uses Task)</li> </ul>	No differences were found between the Aikido and the control group	Future studies should extend the current results, including a larger sample, several training regimes for interventional testing, and additional neuroscientific measures to investigate the hypothesized neural mechanisms
8 Szabolcs <i>et al.</i> (2021)	<ul style="list-style-type: none"> <li>- Spirituality</li> <li>- Mindfulness</li> <li>- Body awareness</li> <li>- Self Compassion</li> </ul>	<ul style="list-style-type: none"> <li>- The Spiritual Connection Questionnaire (SCQ-14)</li> <li>- Mindful Attention Awareness Scale (MAAS) - 15-item scale</li> <li>- The Body Awareness Questionnaire (BAQ)</li> <li>- The Self-Compassion Scale (SCS)</li> </ul>	Generally, higher levels of mindfulness, spirituality, body awareness and self-compassion were found in the Eastern movement forms (Yoga, Aikido and Judo) in contrast to the controls. However, in comparison to Aikido and Judo, Yoga emerged to be the most prominent with respect to the examined four characteristics	Intervention studies are needed to explore the causal relationship(s) between these practices and the variables studied, which may lead to safe recommendations for selecting a specific activity for mental health benefits

and tendons with the union of thought ("think-feel") to reach a state of "intellectual knowing with sensory experiencing" among other aspects he incorporated in his somatic trainings the 'Imagery'<sup>41</sup> and the influence also of Zen Buddhism. In this way he developed a method of combining techniques from this Eastern philosophy with Western science<sup>42</sup>.

The psychosomatic benefits that Mindfulness practices bring through mindfulness of the present moment draw from a part of Buddhist philosophy which is deeply rooted in Aikido. In other words, the quality of Mindfulness improves when this modality of Martial Art is practiced<sup>25</sup>. However, Szabolcs *et al.*<sup>29</sup> find that the discipline of Yoga is more beneficial in relation to mindfulness than Aikido or Judo when analysing the global factor of well-being in the human being (Table 4). Therapeutic treatments have been carried out combining the practice of mindfulness and the theoretical-cognitive application of the field of psychoneuroimmunoendocrinology, on topics such as stress, well-being, perception, the importance of emotions in health and empathy<sup>43</sup>. Psychoneuroimmunology studies those states of abnormal tension produced by an excess of this afferent neuronal excitation flow. Although it has been described that there is an individual variability that seems to be related to specific personality traits as well as to defence and adaptation mechanisms<sup>44</sup>. The psychoneuroimmunoendocrine axis directly reflects the interactions that exist between the psyche, neural functions, endocrine and immune responses<sup>45</sup>. Alterations of stress mediators such as cortisol, as well as local and systemic immune disorders have been described<sup>46</sup>. For example, continuous stressful situations affect the balance of this psychoneuroimmunoendocrine axis, as in the case of post-traumatic stress syndrome in former combatants who have survived a war<sup>19</sup>. Aikido seems to have the necessary tools to align this psychoneuroimmunoendocrine axis although other disciplines where there is no confrontational work such as Yoga may embody a better adaptive response. We must not forget that the martial origin can generate a certain tension that unless it is released may not have all the therapeutic potential in its favour.

Fuller in 1988<sup>5</sup> points out that unlike other arts in which certain skills can be acquired through practice against an imaginary opponent or an inanimate target, Aikido training is almost exclusively interactive. The interaction contains a natural set of checks and balances that continually confront each student with a mirror image of their own behaviour and its effect on others. Aikido's principles of fusion and non-deterrence require students to learn, both literally and metaphorically, to put themselves in the place of their aggressor in order to see how to resolve the conflict. Fuller<sup>5</sup> notes that Aikido training requires cooperative rather than competitive practice, offering the experience of both personal strength over others and vulnerability at the hands of those same individuals. Its techniques, which provide a constructive means of resolving disputes in a harmless manner, inherently demand an empathetic appreciation of the other person's position.

This review provides us with a vision of Aikido as a Martial Art that could be applied as a complementary or alternative treatment to facilitate the resolution of psychological conflicts or to aid individuals who find themselves in conflictive moments in critical stages of their lives. Since the first experimental studies, there have been attempts to improve the management of emotional skills such as frustration tolerance, self-control, anger management, anxiety, aggressive behaviour

and to achieve true self-confidence. The results so far do not support significant improvements in the application of Aikido programmes as seen in the studies of Delva-Tautili<sup>22</sup> and Foster<sup>23</sup>. Possibly these results are due to the age of the participants in the pre- and post-adolescent stage, the small sample sizes of 21 and 69, or perhaps the duration of the programmes applied, 2.5 and 10 weeks. It is surprising that after Foster's study in 1997<sup>23</sup>, Aikido has not been applied again to improve the management of emotional skills.

In this framework of action, we reflect on Morihei Ueshiba's Theory of 'Loving reconciliation'<sup>35</sup>. This theory is a statement of intent in conflict resolution. It could be a fundamental justification for applying Aikido in the framework of intervention to improve emotional skills in early life stages both pre-adolescence and post-adolescence. But this does not seem to be the case. It is likely that in the case of Aikido something more is needed. We posit possibly a Theory of conflict release, reflected in the Principle of Sphericity where the play of two orbital forces make the attacker or uke role project out of tori's orbit<sup>10</sup>. That is to say, 'I welcome the conflict, a union takes place in the void, without an aggressive, harmful or direct contact but by spiral orbital flow into the surrounding space where finally both orbits are released without any trauma between adversaries.

The findings from the study of Aikido in Weiss *et al.*<sup>26</sup>, in which Aikido was used as a combined therapeutic treatment with Cognitive Processing Therapy (CPT) in ex-military patients from the Vietnam War (1 November 1955 - 30 April 1975) were exceptional. These individuals suffered from Post-traumatic Stress Disorder with symptoms of depression. In this case, even applying 52 weeks of Aikido-based intervention programme only the symptoms were improved in Females compared to their control group. Both in the studies of Delva-Tautili<sup>22</sup>, Foster<sup>23</sup> or Weiss *et al.*<sup>26</sup> alluding to the latter, we understand that a better understanding of the mechanisms underlying Aikido is needed, which would help to complement actions in patients who are in the process of clinical treatment or in need of vital well-being.

For this reason, other studies found subsequently: Lothes II, Hakan, & Kassab, 2013; Szabolcs, Szabo & Köteles, 2019; Cuéllar, Bazán & Araya, 2019; Ben-Soussan *et al.* 2019; y Szabolcs *et al.* 2021<sup>24,25,27-29</sup> have mostly focused directly on aspects of mindfulness, spirituality, self compassion or flow experience.

## Conclusion

As a result of this review we have been able to clarify certain psychotherapeutic and clinical aspects of Aikido. In the experimental studies analysed, there is a common denominator based on the sensitive pair work in the interaction between subjects that enhances the overall proprioceptive work of the individual, which we believe to be decisive in the psychosomatic relationship created in Aikido and which heretofore has remained unacknowledged in bibliographical references.

It is our contention that Aikido has the potential to become a discipline suitable for application in all facets of mindfulness work. Furthermore, as a key to the whole systematic review, we highlight the process of interaction with the opponent and the transformation that can come to exist if the management of the confrontation is resolved according to the canons of Aikido and its creator Morihei Ueshiba.

Regardless of the psychological profile of the aikidoka and its field of application, what is essential is to reflect on whether Aikido, as a very sophisticated system in terms of its construction of psychosomatic training techniques, can become useful as a Complementary Therapeutic Treatment in both psychological and psychiatric clinical processes.

If we really know how to control the identical somatic mechanisms originally proposed by Master Morihei Ueshiba in the application of his teaching, we will be able to achieve therapeutic healing. Otherwise, we can consider Aikido as a sports activity or martial work in pairs at the same level as the other modalities, sometimes even below.

Furthermore, a dilemma arises in this analysis based on whether the psychological profile of the practitioner is shaped by the practice of Aikido itself or, on the contrary, whether there is a type of person with certain psychological and personality characteristics who is attracted to this type of discipline.

It is clear that there are limitations to the experimental research found, although it is recognisable that at least some progress has been made since the 1990s.

It is evident that the treatment of Aikido as a discipline with psychotherapeutic potential requires further expert analysis from a transdisciplinary and interdisciplinary perspective to propose an intervention model integrating a profound knowledge of the discipline of Aikido. Additionally, a mastery of the field of psychology and psychiatry is required in order to understand the internal cognitive processes of the subjects studied. For example, it is clear from our review that cross-sectional cohort analyses are not useful in the study of certain emotional variables, but they are useful in the facets and scope of mindfulness.

In the future, longitudinal and qualitatively consistent studies are required in terms of control of the variables that allow the exhaustive follow-up of the subjects in order to fully understand the somato-cognitive processes of the participants themselves in the process of assimilation of the Art of Aikido. The purpose of these processes will be firstly to provide the subjects with practical resources to prevent stressful situations or to face conflicts. And secondly, to help deal with already acquired conflicts in a process of de-traumatisation, de-sensitisation or self-resolution of these conflicts. Proprioception is a multidimensional factor that has not yet been scientifically studied as described above among aikidoka. The psychosomatic relationship with the multidirectional analysis of proprioception would facilitate the understanding of Morihei Ueshiba's precepts regarding the sensory-perceptual and motor state of actions among these Aikido practitioners. Future research should further investigate the relationship with aspects of proprioception in interaction with perception, somato-cognitive, emotions and verbalisation of processes in pairs.

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## Conflict of interest

The authors do not declare a conflict of interest.

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