

Fabienne Ennigkeit & Franziska Leonie Beek

The effect of judo on social behavior with special consideration of periods of reflection

A pilot study in a physical education setting

Abstract

Current research on the effects of martial arts on psycho-social variables (e.g., prosocial behaviour, aggressiveness) in children and adolescents is heterogeneous. There is now a consensus that positive effects of participation in sports or martial arts specifically are not an automatism, but that, among other things, the activity must be instructed accordingly. The aim of this pilot study was to examine the extent to which the particular emphasis on reflection periods in physical education leads to different effects than a corresponding intervention without such a focus. Four eighth grade classes ($N = 94$, 40.4 % male) were taught over a period of five weeks either in judo (two classes with reflection phases, one without) or in volleyball (one class). Social behaviour (empathy, prosocial behaviour, aggressiveness, aggressive behaviour) was assessed before and after the intervention using a standardized questionnaire. We found that the development of social behaviour in the judo group with reflection periods did not differ from that of the other groups. However, this may be due to methodological factors (e.g., small sample, short intervention period).

Zusammenfassung

Der Forschungsstand zu Effekten von Kampfsport auf psychosoziale Variablen (z. B. prosoziales Verhalten, Aggressivität) bei Kindern und Jugendlichen ist heterogen. Einigkeit herrscht inzwischen darüber, dass positive Wirkungen der Teilnahme an (Kampf-)Sport kein Automatismus sind, sondern u. a. die sportliche Aktivität entsprechend angeleitet sein muss. Ziel der vorliegenden Pilotstudie war es, zu prüfen, inwieweit die besondere Betonung von Reflexionsphasen im Schulsport zu anderen Effekten führt als eine entsprechende Intervention ohne diesen Fokus. Dazu wurden vier achte Klassen ($N = 94$, 40.4 % männlich) über fünf Wochen hinweg entweder in Judo (zwei Klassen mit Reflexionsphasen, eine ohne) oder in Volleyball (eine Klasse) unterrichtet. Das Sozialverhalten (Empathie, prosoziales Verhalten, Aggressionsbereitschaft, aggressives Verhalten) wurde vor und nach der Intervention mittels eines standardisierten Fragebogens erhoben. Es zeigte sich, dass sich die Entwicklung des Sozialverhaltens in der Judogruppe mit Reflexionsphasen nicht von der der anderen Gruppen unterscheidet. Dies kann allerdings methodisch begründet sein (z. B. kleine Stichprobe, kurze Interventionsdauer).

Keywords

judo, social behavior, aggressiveness, physical education, reflection

Contact

Fabienne Ennigkeit, PhD
[Goethe University Frankfurt, Germany](https://www.goethe-university-frankfurt.de)
ennigkeit@sport.uni-frankfurt.de

This work is licensed under a [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/) and published in the [JOMAR | Journal of Martial Arts Research](https://www.jomar.com) (ISSN 2567-8221) on 2019-04-29.
For more: [j-o-mar.com](https://www.j-o-mar.com)

Introduction

The assumption that participation in martial arts leads to positive effects on social behavior in children and adolescents is widespread. Martial arts schools advertise their courses with alleged advantages such as that participation will “encourage non-violent conflict resolution”, “improve listening skills”, “boost socialization skills” and “develop teamwork skills” (Brown, 2016). It is because of these believed positive educational opportunities for students that martial arts is part of the physical education curriculum in different countries (for Europe, see Theeboom & De Knop, 1999; for Germany, see Ennigkeit, 2016; Leffler, 2011). For example, the authors of the physical education curriculum for secondary schools in Hesse, Germany, state that, with addressing martial arts in grades 7 to 9, empathy, frustration tolerance, identity development, and conflict management can be improved (Hessisches Kultusministerium, 2011). On the other hand, parents often assume that participation in martial arts might increase violence and aggressiveness of their children (e.g., Quora, 2018).

Previous empirical research on effects of martial arts on social behavior of children and adolescents has found mixed results. For example, Vertonghen and Theeboom (2010) conducted a systematic review and stated that most studies suggest positive effects such as a decrease of violence and an increased level of self-regulation. However, they also report studies showing negative effects such as an increase of antisocial behavior. The authors concluded that their review “has not been able to provide overall conclusive evidence regarding the social-psychological outcomes of martial arts practise” (p. 534). In a similar vein, Liebl, Happ, and Zajonc (2016) suggest, that to date, there is no sufficiently robust study confirming positive effects of martial arts on psycho-social outcomes. A more recent meta-analysis showed some support for reduced aggressiveness through martial arts training (Harwood, Lavidor, & Rassovsky, 2017).

What is often criticized about research on developmental outcomes of sport participation in general and of martial arts participation in particular is the fact that the underlying processes remain unclear. This is what Vertonghen and Theeboom (2013) call the “black box approach in sport participation research”. Simply participating in any sports activity will not automatically lead to positive outcomes. As such, it seems unreasonable to expect a causal relationship between mere participation in a certain kind of sport and certain kinds of outcomes. Instead, the authors suggest a model that focuses on the mechanisms affecting whether martial arts participation leads to certain developmental outcomes. They identify four mediating factors as part of the “black box”, namely (1) structural qualities of martial arts (e.g., type of martial arts), (2) type of guidance (e.g., teaching approach), (3) characteristics of the participants (e.g., initial level of psycho-social behavior, goal orientations), and (4) social back-ground (e.g., education and physical activity of the parents). So in summary, the question of interest should not be “Does martial arts participation lead to positive psycho-social outcomes in children and adolescents?”, but “Which child or adolescent benefits from which type of martial arts training under which circumstances?”.

In the present study, we address one mediating factor that can be subsumed under the “type of guidance” category: the educational framing of the martial arts practice with periods of reflection and rituals. The principle of reflective instruction (“Prinzip der reflexiven Sportvermittlung”; Conzelmann, Schmidt, & Valkanover, 2011) states that guided reflection in physical education is regarded a suitable intervention for the development of self-concept (Oswald, Valkanover, & Conzelmann, 2013) and social skills (e.g., Balz, 2003; Becker, 2008; Funke-Wieneke, 1997). Self-reflection includes thinking about oneself and one’s body in motion and reflexive self-attribution of predicates is considered an important source of self-relevant information (Filipp, 1979) that fosters self-related development. The idea is that

the processing of experiences made while fighting through verbal exchange should increase the likelihood of positive developmental outcomes.

The aim of the present study therefore was to test the hypothesis that a judo intervention with a special focus on rituals and reflection periods will lead to significant changes in self-reported empathy, prosocial behavior, propensity for aggression, and aggressive behavior compared to a judo intervention without such a focus and compared to a control intervention. Judo was chosen for two reasons: It is the martial art most often referred to in German school curricula (Ennigkeit, 2016) and the researchers involved had expertise in this type of martial arts.

Methods

We used a pre-post-test design with three groups: (1) a judo intervention group with a special focus on rituals and reflection (Judo-RR), (2) a judo intervention group with no such special focus (Judo-NRR) and (3) a volleyball intervention that served as a control group (CON).

Four classes of eighth graders from a secondary school (Gymnasium) in Hesse, Germany, took part in the study. In total, the sample comprised $N = 94$ students (59.5% female; $M_{\text{age}} = 13.1$ years, $SD = 0.6$). Two classes ($n = 46$; 58.7% female; $M_{\text{age}} = 13.2$ years, $SD = 0.5$) received the Judo-RR intervention, one class ($n = 24$; 54.2% female; $M_{\text{age}} = 13.1$ years, $SD = 0.8$) received the Judo-NRR intervention and the last class ($n = 24$; 66.7% female; $M_{\text{age}} = 12.9$ years, $SD = 0.4$) served as a control group.

The intervention lasted about seven weeks and started right after the summer holidays. Due to unexpected circumstances (e.g., classes were cancelled due to the heat), only 10 to 13 teaching units per group could be realized during that time. In both judo groups, content included trust building activities, activities to get accustomed to physical contact with others, cooperative and combative games, basic judo techniques (Ukemi, O-goshi and O-soto-otoshi in Nage-waza, Kesa-gatame, Mune-gatame and corresponding escapes in Ne-waza, Randori in Ne-waza), invented kata, and information regarding safety and basic rules. While the Judo-RR group was taught with a focus on rituals and etiquette, the joint development of rules, and regular reflections of experiences during and after activities, no such elements were included in the Judo-NRR group. The CON group was taught preparative volleyball games and the techniques of the overhand set, the bump, and the underhand serve by a different teacher. In this group, sometimes final reflections at the end of the lesson were included.

To assess prosocial behavior and aggressiveness before and after the intervention, we used the German *Fragebogen zur Erfassung von Empathie, Prosozialität, Aggressionsbereitschaft und aggressivem Verhalten* (Questionnaire to assess empathy, prosocial behavior, propensity for aggression, and aggressive behavior; Lukesch, 2006) which was designed for adolescents aged 12 to 16. *Empathy* is assessed by registering the reactions to 14 social interaction situations described. The adolescents are required to put themselves in the shoes of the two actors described and answer one item for each actor (e.g., "What does Tom feel when he sees his sister running away?"). Each item has three response options that are coded according to the manual, with higher scores representing a higher degree of empathy (range of values: 28–84). For *propensity for aggression*, 13 other social interactions are described and adolescents evaluate these situations by choosing how right or wrong they judge the behavior of the actor to be (7-point Likert scale). Higher scores indicate a high propensity for aggression (range of values: 13–91). *Prosocial behavior* is assessed by 13 true-false statements (e.g., "When I eat candy during the break, I share it with others"), with higher sum scores indicating positive prosocial behavior (range of values: 13–26). Finally, *aggressive behavior* is measured by 15 true-false statements (e.g., "I've kicked others in a fight before"), with higher scores representing more aggressive behavior (range of values: 15–30).

For the present study, some items were slightly modified to adapt them to everyday language (e.g., names like Lea instead of Ingrid were used). The scales showed acceptable internal reliability ($.74 \leq \alpha \leq .85$), with the exception of the prosocial behavior scale ($\alpha = .57$).

Besides, we used the *Skala zur methodischen Reflexion* (Scale to assess reflection in physical education; Magnaguagno, Schmidt, Valkanover, Sygusch, & Conzelmann, 2016) as a manipulation check after the intervention period. The four items assess the extent to which students feel they are encouraged to reflect their experiences in physical education (sample item: “Our PE teacher wants us to discuss experiences in PE class”). Items were answered on a four-point-Likert scale (*completely false*–*completely true*) and averaged. The scale showed acceptable internal consistency in the current study ($\alpha = .74$).

Results

To test the effectiveness of the manipulation, we conducted a one-factorial analysis of variance for the perceived degree of reflection during the intervention period. This analysis showed a significant main effect, $F(2, 91) = 3.24, p = .044, \eta^2 = .066$. Post-hoc analyses (Tukey-HSD) revealed that the Judo-RR group perceived more reflection than the Judo-NRR group ($p = .045$). However, the assessments of the CON group did not differ significantly from those of the other two groups ($p = .115$ for the comparison with Judo-NRR, $p = .992$ for the comparison with Judo-RR).

To test the hypothesis, we conducted four 2x3 mixed analyses of variances (time (pre vs. post) x group (Judo-RR vs. Judo-NRR vs. CON)) with time as a repeated measurement factor separately for each dependent variable.

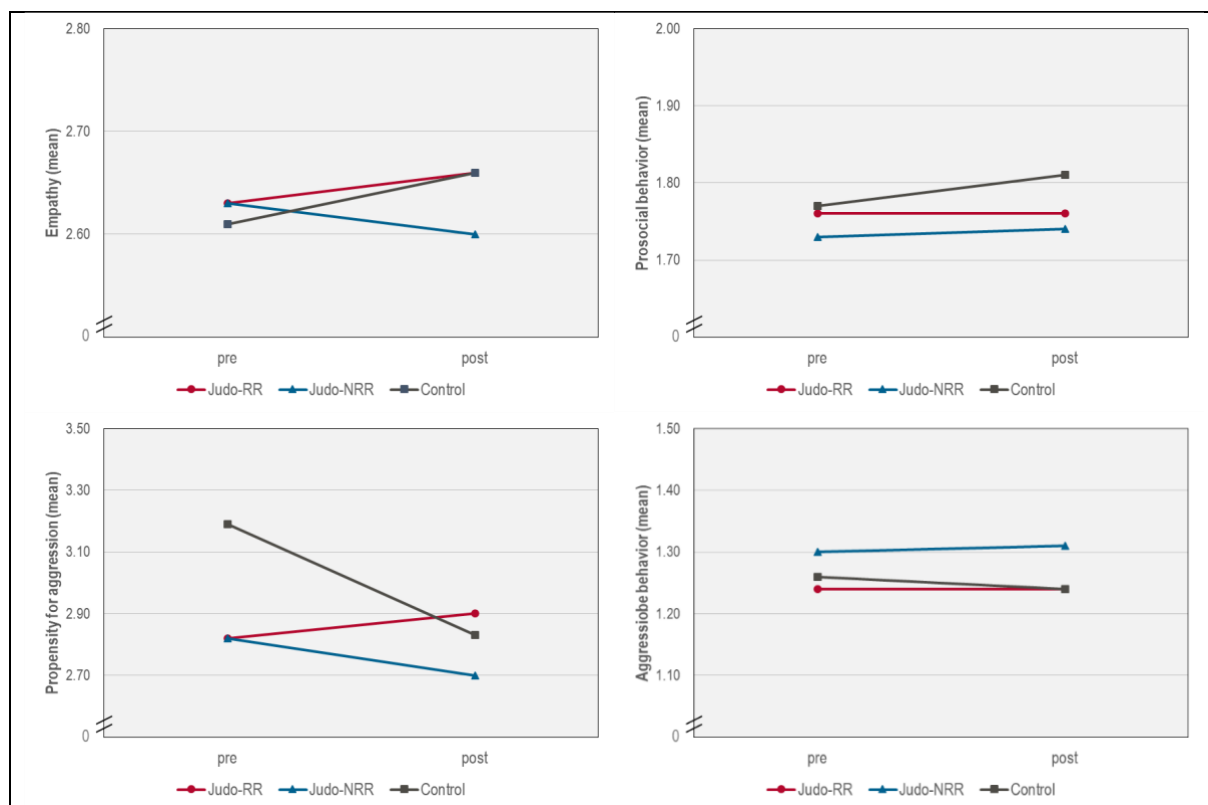


Figure 1: Pre-post comparisons between the three intervention groups (Judo-RR: judo intervention with a special focus on rituals and reflection, Judo-NRR: judo intervention without such a focus, Control: volleyball control group) for empathy (top left), prosocial behavior (top right), propensity for aggression (bottom left), and self-reported aggressive behavior (bottom right).

For *empathy* (top left in figure 1), neither the main effect for time, $F(1, 91) = 0.82, p = .368, \eta^2 = .009$, nor the main effect for group, $F(2, 91) = 0.13, p = .879, \eta^2 = .003$, nor the hypothesized time x group interaction, $F(2, 91) = 0.81, p = .448, \eta^2 = .018$, yielded significant results. The same was true for *prosocial behavior* (top right in figure 1; time: $F(1, 91) = 1.91, p = .170, \eta^2 = .021$, group: $F(2, 91) = 0.91, p = .409, \eta^2 = .019$, time x group: $F(2, 91) = 1.01, p = .370, \eta^2 = .022$). The analysis for *propensity for aggression* (bottom left in figure 1) revealed no significant main effects either (time: $F(1, 91) = 3.49, p = .065, \eta^2 = .037$, group: $F(2, 91) = 0.47, p = .628, \eta^2 = .010$). However, the time x group interaction was significant, $F(2, 91) = 3.43, p = .037, \eta^2 = .070$. Follow-up analyses showed that this interaction was due to a significant decrease of propensity for aggression in the CON group; however, the level was a lot higher there to begin with. The Judo-RR and the Judo-NRR group did not differ significantly in pre-post differences for propensity for aggression. Finally, we found no significant main or interaction effects for self-reported *aggressive behavior* (bottom right in figure 1; time: $F(1, 91) = 0.13, p = .723, \eta^2 = .001$, group: $F(2, 91) = 1.41, p = .249, \eta^2 = .030$, time x group: $F(2, 91) = 0.38, p = .683, \eta^2 = .008$).

Discussion

The present study showed no effects of conducting a judo intervention with a special focus on periods of reflections and rituals on social behavior, compared to a judo intervention without such a focus and a control volleyball intervention. The hypothesis thus could not be confirmed. While the present study adds to the heterogeneous results described in the literature on the effects of martial arts practice on psycho-social outcomes (Vertonghen & Theeboom, 2010), the study must definitely be considered a pilot study.

Limitations include the small sample size which probably leads to the study being underpowered, and general problems related to field studies. In this case, the intervention period was very short to begin with and then external circumstances (e.g., heat) led to the additional cancellation of some lessons. Some authors (e.g., Happ, 2009; Langewitz & Bernart, 2007) argue that developmental effects of martial arts practice might only be detectable after years of training, suggesting that interventions in physical education might be too short to lead to meaningful changes in psycho-social variables.

Another factor worth discussing is the choice of the control group which was the bilingual class of the year. In this group, high performing students are gathered which means that they might not be comparable to the students in the other three classes. Besides, this group was taught by another teacher than the three judo groups for organizational reasons. The role of the teacher might be pivotal for developmental outcomes and might be more important than the actual sport or martial art practiced: "There are no good or bad martial arts, there are only good or bad teachers" (Theeboom & Vertonghen, 2011, p. 45). Also, the choice of activity in the control group was determined by the teacher who instructed the class. It would have been more desirable to choose different control activities which then could have been taught with and without a focus on reflection periods as well. In the current study, the teacher instructed her class as usual, which meant that certain reflection activities were included. This also showed in the manipulation check, which barely reached statistical significance for the comparison between the Judo-RR and the Judo-NRR group, and did not yield significant differences in perceived degree of reflection between the CON group and the two judo groups.

Another problem is the questionnaire used to assess social behavior. First, it relies on self-report data which might be different from data observed by teachers, peers, or parents. Second, although the authors state that the scale is capable of detecting changes over time, it might not be sensitive enough for changes occurring in such a short time period. The questionnaire includes two parallel forms (A and B) which can be used to avoid memory

effects. In the present study, accidentally, for two of the four subdimensions, the same form was used in both the pre- and the post-test which might have distorted the results. Also, the internal consistency of the prosocial behavior subscale was rather low, suggesting that the results for this subdimension are not reliable.

Against the background of all these limitations, this study can at most be regarded as a pilot study. However, we think it is one of very few existing studies that try to dig deeper into the “black box”. In our opinion, it is central to further investigate factors moderating the relation between martial arts participation (or sports participation in general) and psychosocial or developmental educational outcomes. The key research question must be: Which child or adolescent benefits from which type of martial arts (or sports) training under which circumstances? For this question to be answered, it is also relevant to elaborate on the assumed underlying processes that lead to positive changes in children and adolescents. For example, what does martial arts differentiate from other types of sports? Is it really the type of sport that is decisive for positive effects, or are other factors like teaching style or the fit between content or teaching style, respectively, and individual characteristics of the participants much more important? Future studies should therefore focus on experimentally manipulating different characteristics of the martial arts training (or intervention) and investigate how these factors differentially affect psycho-social outcomes (see also Vertonghen & Theeboom, 2014). This is especially important considering the fact that school curricula consistently emphasize supposed developmental benefits of physical education, despite a lack of empirical evidence. Therefore, a future focus should be on investigating how physical education and teacher training must be designed in order to foster positive outcomes in children and adolescents (see also Sygusch & Herrmann, 2013).

References

- Balz, E. (2003). Wie kann man soziales Lernen fördern [How can social learning be promoted]? In Bielefelder Sportpädagogen (Eds.), *Methoden im Sportunterricht. Ein Lehrbuch in 14 Lektionen* (pp. 149-168). Schorndorf: Hofmann.
- Becker, G. (2008). *Soziale, moralische und demokratische Kompetenzen fördern* [Promoting social, moral and democratic competences]. Weinheim: Beltz.
- Brown, J. (2016). *10 reasons your child should do martial arts*. Retrieved from <https://brownmartialarts.com/2016/01/07/10-reasons-your-child-should-do-martial-arts/>
- Conzelmann, A., Schmidt, M., & Valkanover, S. (2011). *Persönlichkeitsentwicklung durch Schulsport* [Personality development through physical education.] Bern: Huber.
- Ennigkeit, F. (2016). Kämpfen in den gymnasialen Lehrplänen der Bundesländer [Martial arts in the school curricula of German federal states]. In M. J. Meyer (Ed.), *Martial Arts Studies in Germany - Defining and Crossing Disciplinary Boundaries. Kampfkunst und Kampfsport in Forschung und Lehre 2015* (pp. 104-113). Hamburg: Czwalina.
- Filipp, S.-H. (1979). Entwurf eines heuristischen Bezugsrahmens für Selbstkonzept-Forschung: Menschliche Informationsverarbeitung und naive Handlungstheorie [Design of a heuristic frame of reference for self-concept research: human information processing and naive action theory]. In S.-H. Philipp (Ed.), *Selbstkonzept-Forschung: Probleme, Befunde, Perspektiven* (pp. 129-152). Stuttgart: Klett-Cotta.
- Funke-Wieneke, J. (1997). Soziales Lernen [Social learning]. *Sportpädagogik*, 21(2), 28-39.
- Happ, S. (2009). Kämpfen [Fighting]. In R. Laging (Hrsg.), *Inhalte und Themen des Bewegungs- und Sportunterrichts* (S. 243-277). Baltmannsweiler: Schneider.
- Harwood, A., Lavidor, M., & Rassovsky, Y. (2017). Reducing aggression with martial arts: A meta-analysis of child and youth studies. *Aggression and Violent Behavior*, 34, 96-101. doi:10.1016/j.avb.2017.03.001
- Hessisches Kultusministerium (2011). *Bildungsstandards und Inhaltsfelder - Das neue Kerncurriculum für Hessen. Sekundarstufe I - Gymnasium. Sport* [Educational standards and contents - The new core curriculum for Hesse. Secondary level I - Gymnasium. Physical Education]. Retrieved from https://kultusministerium.hessen.de/sites/default/files/media/kerncurriculum_sport_gymnasium.pdf
- Langewitz, O. & Bernart, Y. (2007). *Jugendliche und Kampfsport: Persönlichkeitsentwicklung und Wertevermittlung in der Kampfsportausbildung* [Young people and martial arts: personality development and conveying of values in martial arts training]. Göttingen: Cuvillier.
- Leffler, T. (2011). Kämpfen im Sportunterricht [Martial arts in physical education]. In P. Kuhn, H. Lange, T. Leffler & S. Liebl (Eds.), *Kampfkunst und Kampfsport in Forschung und Lehre 2011* (pp. 129-136). Hamburg: Czwalina.

- Liebl, S., Happ, S., & Zajonc, O. (2016). Review zu Wirkungen von Kampfkunst und Kampfsport auf die Persönlichkeitsentwicklung von Kindern und Jugendlichen [Review about the effects of martial arts on personality development of children and adolescents]. In M. J. Meyer (Ed.), *Martial Arts Studies in Germany - Defining and Crossing Disciplinary Boundaries. Kampfkunst und Kampfsport in Forschung und Lehre 2015* (pp. 82-91). Hamburg: Czwalina.
- Lukesch, H. (2006). *Fragebogen zur Erfassung von Empathie, Prosozialität, Aggressionsbereitschaft und aggressivem Verhalten* [Questionnaire to assess empathy, prosocial behavior, propensity for aggression, and aggressive behavior]. Göttingen: Hogrefe.
- Magnaguagno, L., Schmidt, M., Valkanover, S., Sygusch, R., & Conzelmann, A. (2016). Programm- und Outputevaluation einer Intervention zur Förderung des sozialen Selbstkonzepts im Sportunterricht [Program and output evaluation of an intervention promoting social self-concept in physical education]. *Zeitschrift für Sportpsychologie*, 23(2), 56-65. doi:10.1026/1612-5010/a000163
- Oswald, E., Valkanover, S., & Conzelmann, A. (2013). Die Implementation einer Intervention zur Veränderung des Selbstkonzepts im Sportunterricht [The implementation of an intervention to change self-concept in physical education]. *Schweizerische Zeitschrift für Bildungswissenschaften*, 35(2), 255-273.
- Quora (2018). *Does martial arts training promote violence in kids?* Retrieved from <https://www.quora.com/Does-martial-arts-training-promote-violence-in-kids>
- Sygusch, R. & Herrmann, C. (2013). *PRimus-Studie - Psychosoziale Ressourcen im Jugendsport: Evaluation der Programmdurchführung und Programmwirksamkeit* [Primus study - Psycho-social resources in youth sport: Evaluation of implementation and effectiveness of the programme]. Hamburg: Czwalina.
- Theeboom, M. & De Knop, P. (1999). Asian martial arts and approaches of instruction in physical education. *European Journal of Physical Education*, 4, 146-161.
- Theeboom, M. & Vertonghen, J. (2011). "It is like a finger pointing away to the moon" - Teaching martial arts to children". In W. Cynarski, K. Obodynski, K., & N. Porro (Eds.), *Sports, bodies, identities and organizations: Conceptions and problems* (pp. 68-79). Rzeszów: Faculty of Physical Education, University of Rzeszów.
- Vertonghen, J. & Theeboom, M. (2010). The social-psychological outcomes of martial arts practise among youth: A review. *Journal of Sports Science and Medicine*, 9, 528-537.
- Vertonghen, J. & Theeboom, M. (2013). How to obtain more insight into the true nature of outcomes of youth martial arts practice? *Journal of Children's Services*, 8(4), 244-253. doi:10.1108/JCS-03-2013-0006
- Vertonghen, J. & Theeboom, M. (2014). Mediating factors in martial arts and combat sports: An analysis of the type of martial art, characteristics, and social background of young participants. *Perceptual & Motor Skills*, 118, 41-61. doi:10.2466/06.30.PMS.118k14w3