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Virtue Education in
Judo-Philosophy-Based
Physical Activities for
5–6-Year-Old Children
in Preschool and
Non-Formal Education

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the scientific degree “Doctor of Science (*PhD*)”

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Abbreviations used in the Thesis

JPBPA	Judo-philosophy-based physical activities
Judo Sessions	At the non-formal education institution (VZSS), classes were introduced that were based on the philosophy of judo and a pedagogical approach.
IJF	International Judo Federation
Jita Kyoei	Mutual benefit and welfare; one of the fundamental principles of Jigoro Kano's judo philosophy, emphasising the importance of cooperation and the common good.
MG	Main group
PEI	Preschool education institution
PEI-4	Main group at PEI with JPBPA implemented twice per week
PEI-5	Comparative group at PEI with JPBPA implemented once per week
Seiryoku Zenyo	"Maximum efficiency with minimum effort", one of the fundamental principles of Jigoro Kano.
CG	Comparative group
HPALA	Health and Physical Activity Learning Area
NCE	National Centre for Education
VZSS	Vsevolods Zeļonijs Sports School
VZSS-1	2 years of experience in VZSS training sessions
VZSS-2	1 year of experience in VZSS training sessions
VZSS-3	No prior experience (beginners) in VZSS training sessions

Introduction

In contemporary preschool educational practice, increasingly pronounced behavioural difficulties are observed among children, including insufficient socio-emotional self-regulation, aggressive reactions, and limited cooperation skills, which substantially complicate processes of socialisation and personality development. These manifestations do not represent an isolated pedagogical phenomenon but are embedded within a broader social context. Empirical studies indicate that experiences of violence and exposure to negative social environments significantly influence children's behavioural patterns and may contribute to the emergence of aggressive responses at an early age (Ellonen & Pösö, 2011).

At the same time, researchers emphasise that the preschool period constitutes a sensitive stage in the formation of virtue awareness, self-regulation, and the foundations of social behaviour (Bandura, 2014; Выготский, 2010). Insufficiently systematic implementation of the educational function during this developmental stage may reinforce socially undesirable behavioural patterns. The relevance of the present study is supported by research conducted by Latvian scholars (Kiope, 2015; Fernández González, 2019a; Lasmane, 2024), as well as by international studies highlighting the importance of virtues-based education in early childhood (Khandaker, 2021).

Socio-economic and technological transformations in the 21st century have contributed to a shift in emphasis within educational systems toward the instructional dimension of schooling, while simultaneously reducing the relative significance of the formative component, despite its formal recognition as an integral part of the educational process in regulatory documents (Ministru kabinets, 2018). Differences in families' material resources determine unequal access to extracurricular education and sports activities, which may adversely affect children's socio-emotional well-being and behavioural development.

With material values increasingly prevailing over spiritual and humanistic orientations, the availability of positive virtue role models and virtue-oriented upbringing has diminished, potentially facilitating the consolidation of socially negative attitudes (Špona, 2022; Bandura, 2014). These tendencies should be analysed within the broader context of socio-historical transformations characterised by structural changes in traditional community norms and educational mechanisms (Blum, 2017). Empirical research further demonstrates associations between value disorientation, social environment, and the manifestation of aggressive behaviour in childhood and adolescence (Fung et al., 2019; Ellonen & Pösö, 2011; Raaijmakers et al., 2008; Lee et al., 2022; Lindell-Postigo et al., 2023).

According to the methodological materials of *Skola 2030* (Valsts izglītības satura centrs [VISC], 2019), the preschool period is characterised as a particularly favourable stage

for the purposeful development of children's self-regulation, independence, cooperation, and civic participation skills, emphasising the unity of learning and upbringing within the child's activity and the significance of the teacher's example. International research indicates that physical activities implemented in cooperation with others and within a structured framework of rules contribute not only to children's physical development but also to their socio-emotional growth.

Judo philosophy, established in 1882 by Jigoro Kano as a system of physical, intellectual, and virtue education, was originally oriented toward the development of responsibility, respect, self-regulation, and cooperation. Over time, judo has been recognised as both an educational and cultural value, as evidenced by its Olympic status and the activities of the International Judo Federation (IJF, 2024), which unites more than 200 national federations worldwide.

An analysis of Kano's philosophical principles alongside contemporary research suggests that the core principles of judo can be effectively applied to support the physical, cognitive, and socio-emotional development of preschool children. Furthermore, children engaged in judo demonstrate higher levels of socio-emotional competencies, including empathy (Krauze et al., 2025b). The virtues embedded in judo philosophy conceptually align with the objectives and principles of the *Skola 2030* educational reform, allowing judo-philosophy-based physical activities (JPBPA) to be regarded as a contemporary pedagogical instrument for implementing these objectives in preschool education.

Child development occurs through activity; therefore, judo-philosophy-based physical activities (JPBPA) are practically implementable without specialised technical equipment, accessible to children with special educational needs, and consistent with the principles of inclusive education. The results of the pedagogical pilot study and the pedagogical intervention confirm that JPBPA promote cooperation, civic participation, understanding of virtues, and the formation of virtue-based personal qualities among children aged 5–6 years. At the same time, they contribute to the reduction of aggressive manifestations and support the consolidation of positive behavioural patterns in preschool and extracurricular educational settings.

However, an analysis of the scientific literature indicates that, in studies examining the use of judo with 5–6-year-old children, the aspect of virtue development is predominantly addressed fragmentarily and is not analysed as an independent and systematic object of pedagogical inquiry (Sterkowicz-Przybycień et al., 2014; Kowalczyk et al., 2022; Eryong & Li, 2021). This reveals a scientific gap in the investigation of the purposeful promotion of virtue

understanding among preschool children through physical activities grounded in judo philosophy and determines the need to develop and pedagogically validate an appropriate model.

Accordingly, the present study focuses on the examination of judo-philosophy-based physical activities as a structured pedagogical mechanism that enables the purposeful promotion and objective assessment of the development and manifestation of virtues among children aged 5–6 years in preschool and extracurricular education environments.

The identified socio-pedagogical problems, theoretical contradictions, and the lack of systematic scientific research determined the choice of the topic of the doctoral dissertation: “Virtue Education in Judo-Philosophy-Based Physical Activities for 5–6-Year-Old Children in Preschool and Non-Formal Education”.

Object of the Research: Judo-philosophy-based physical activities implemented in preschool sports lessons within the learning area “Health and Physical Activity” and in the non-formal education judo sports programme.

Subject of the Research: Manifestations of virtues among 5–6-year-old children in judo-philosophy-based physical activities.

Limitations of the research: The study was conducted in the environment of a preschool educational institution and within a non-formal education judo sports programme involving children aged 5–6 years. The research analysed children’s mutual cooperation, as well as the professional evaluations of teachers and coaches regarding manifestations of virtue (prosocial behaviour and socio-virtue competencies) in the educational setting. The findings of the study are applicable only to the specified age group and the particular educational and sports context examined.

Research Base: The judo sports programme (three groups) of the Professional Orientation Education Institution Vsevolods Zelonijs Sports School (hereinafter – VZSS) and the sports lessons within the Health and Physical Activity learning area (two groups) of a Riga preschool educational institution.

Aim of the Research

To develop and validate a model of judo-philosophy-based physical activities (JPBPA) for 5–6-year-old children in preschool and non-formal education, and to formulate recommendations for sports educators to support the development of *virtue* in children.

Research Hypothesis

If judo-philosophy-based physical activities are purposefully implemented in preschool children’s physical activity sessions, ensuring independent child activity, social interaction, and systematic experience of virtues (respect, friendship, honesty, participation),

then the understanding of virtues, behavioural self-regulation, and socio-emotional interaction of 5–6-year-old children in the preschool educational environment will be enhanced.

Research Tasks

1. To analyse the scientific literature on judo philosophy, the essence of virtue acquisition, and the potential of physical activities for fostering virtue development in preschool children, as a foundation for the development of a Judo-philosophy-based Physical Activities (JPBPA) model.
2. To determine the initial level of children's virtue manifestations within a pedagogical pilot study conducted in extracurricular judo classes (VZSS), employing mixed research methods.
3. To evaluate expert opinions regarding the necessity of integrating virtue education content within JPBPA, as well as to analyse expert assessments of the impact of JPBPA on children's virtue manifestations following the pedagogical intervention in preschool education institutions (PEI).
4. To implement a JPBPA pedagogical intervention in preschool education institutions (PEI), to assess the dynamics of children's virtue manifestations before and after the intervention, and to compare the results between extracurricular (VZSS) and preschool (PEI) groups.
5. To refine the JPBPA model and to develop practical recommendations for its application.

Research Methods

1. Theoretical Research Methods
 - Analysis of pedagogical, psychological, and methodological literature;
 - Analysis of regulatory documents (MK, *Skola 2030*).
2. Empirical Research Methods
 - Pedagogical observation: systematic observation of children's behavioural manifestations (respect, friendship, honesty, participation);
 - Structured discussions with children: systematic teacher-led discussions following DFBFA exercises;
 - Expert survey: evaluation of the model's relevance and the necessity of the exercise framework.
3. Psychological Diagnostic Methods
 - R. Kalinina's method "Plot Pictures";
 - Dermanova's method "Complete the Sentence";

- Košeļeva's methodology on mutual assistance.
4. Pedagogical Experimental Methods
- Ascertaining experiment (VZSS, three groups);
 - Formative experiment (PEI, two groups);
 - Modelling (development and refinement of the JPBPA model).
5. Data Processing and Interpretation Methods
- Mathematical statistics;
 - Quantitative and qualitative data analysis.

Theoretical and Methodological Framework of the Study

- The methodological framework of the doctoral dissertation is grounded in a holistic approach to sport in preschool education (Lieģeniece, 1997; Bula-Biteniece, 2011); A child-centred approach to fostering children's independence (Piaget, 2003; Grava, 2018; LR MK, 2018; VISC, 2019); activity-based methodological approach (Froebel, 1885; Špona, 2022; Harvard University Center on the Developing Child, 2022), the methodological approach of the unity of theory and practice (Špona, 2001, 2022; Līduma, 2023).
- In substantiating the ethical education of preschool-age children, the study draws upon the works of scholars in the fields of pedagogy, psychology, and developmental sciences: Kano, 2013; Wallace & Walker, 2020; Выготский, 2010; Špona, 2001; 2022; Bradič, 2023.
- For the identification and assessment of the essence and manifestations of ethical values (respect, friendship, honesty, participation) Murata, 2020; Lasmene, 2024; Kiope, 2015; Fernández Gonzáles, 2020; Oberdorfer, 2020; Montessori, 2004; Špona, 2022; Brousse, 2021.
- The justification for the application of the fundamental principles of judo philosophy and the pedagogical potential of physical activities in fostering ethical development among preschool children is supported by the findings of Tomey, 2017; Shishida, 2012; Kano, 1922; 2009; Pereira, et al., 2021; Lukanova, 2019; Masenko, 2015; Dapp, Gashaj, & Roebbers, 2021; Ābele, 2018; as well as by the guidelines of the European Commission (Eiropas Komisija, 2008); World Health Organization, 26 June 2024.
- The theoretical justification of the exercise content is grounded in J. Piaget's cognitive theory of intellectual development (Piaget, 2003), L. Vygotsky's concept of the zone of proximal development (Выготский, 2010), M. Montessori's theory of sensitive periods (Montessori, 2004), H. Gardner's theory of multiple intelligences (Gardner, 1996, 2007), as well as in the model of the formation of positive "Self" emotions in physical activities developed within sports pedagogy by R. Jansone and I. Bula-Biteniece (2008).

- Theoretical substantiation by the author of the use of play-based methods and competitive formats in team interaction to support children's socio-emotional development King & Newstead, 2022; Zosh et al., 2022; Garbeloto et al., 2023.
- Activity theory on the development of children's abilities through activity: Špona, 2022; Kreigas un D. Bokuma (Крайг & Бокум, 2004); Elkoņins (Эльконин, 2017); Harvard University Center on the Developing Child, 2022.
- On Self-Experience and Independence in Learning: Dale (1969) Experience Pyramid; Bruner (2004) Learning Theory; Dewey (1968) Learning by doing; Kolb (2014) Empirical Learning Theory; Anderson & Krathwohl (2001) Taxonomy (revised Bloom's taxonomy); Biggs & Collis (1982) the SOLO taxonomy (Structure of the Observed Learning Outcome).
- Theoretical Justification of the Cognitive, Behavioural, Emotional, Communicative, Activity-Based, and Motivational Aspects of Ethical Value Acquisition in the Works of Scholars: (Durkheim, 2012; Kaiser & Fröhlich-Gildhoff, 2022; Kano, 2009; Adriana & Mircea, 2011; Supinski et al., 2014; Decety & Ickes, 2011; Callan & Bradić, 2018; Bennett & Kano, 2009; Garbeloto et al., 2023; Sterkowicz-Przybycień et al., 2014; Lo et al., 2019; Bandeira, de Oliveira & Brasil, 2022; Pereira et al., 2021; Lukanova, 2019; Masenko, 2015; Smaruj et al., 2019; Selman et al., 2017).
- Justification of the Concept of Habits Based on Authors' Theoretical Insights: Zelmenis, 2000; Špona, 2001; 2022; Vecenāne, 2016; Gardner et al., 2022; Wood et al., 2022; Carden, & Wood, 2018.

Type of the Study: Quantitative and qualitative research.

Scientific Novelty of the Study

For the first time in Latvia, the Doctoral Thesis provides a scientific substantiation and pedagogical validation of an approach to fostering virtue manifestations based on structured physical activities grounded in judo philosophy (JPBPA) within preschool and extracurricular education settings for children aged 5–6 years. In the course of the study, a Judo-philosophy-based Physical Activities (JPBPA) model was developed and empirically tested. The model promotes children's understanding of virtues, socio-emotional self-regulation, mutual cooperation, participation, and behaviour, and its effectiveness has been empirically substantiated through the analysis of children's performance dynamics before and after the pedagogical intervention.

The study identified the positive impact of JPBPA on the development of children's virtue manifestations, employing a mixed-methods research methodology that integrates

qualitative and quantitative approaches, as well as an author-developed system of criteria, indicators, and levels for assessing virtue understanding.

Within the framework of the research, a comparative evaluation was conducted across five groups of children, including preschool education institutions and extracurricular settings (judo sports school environment). This enabled the identification of differences in the dynamics of virtue acquisition depending on the pedagogical approach and children's prior experience in physical activities. As a result of the study, the JPBPA model was refined by integrating expert evaluations and empirical data, thereby creating a practically applicable and theoretically grounded instrument for virtue education that corresponds to the developmental characteristics of preschool children and the objectives of the *Skola 2030* educational reform.

Theoretical Significance of the Study

The Doctoral Thesis expands the theoretical understanding within sports pedagogy and preschool pedagogy regarding the possibilities of virtue education through children's activity, substantiating that judo-philosophy-based physical activities (JPBPA) function as a structured pedagogical mechanism that promotes the development of virtue understanding, socio-emotional self-regulation, and behavioural change in preschool-aged children.

The study theoretically demonstrates that the promotion of virtue understanding is more effective when implemented within purposefully organised activities that combine clearly defined rules, cooperation, repetition, and the teacher's example, in accordance with humanistic pedagogy and socio-emotional development approaches. It is shown that JPBPA integrates principles derived from Kano's judo philosophy with contemporary educational paradigms, thereby establishing a theoretical link between virtue education, movement-based activity, and the holistic development of the child's personality.

The findings contribute to the theoretical knowledge base on virtue education processes by clarifying causal relationships between pedagogical intervention, children's engagement in physical activities, and the dynamics of virtue manifestations. This allows for a more precise conceptualisation of the mechanisms underlying the formation of virtue qualities in preschool-aged children in both preschool and extracurricular education contexts.

Practical Significance of the Study

The JPBPA model developed and pedagogically validated within the Doctoral Thesis is practically applicable in preschool education institutions and extracurricular education as a structured instrument for promoting children's virtue understanding, socio-emotional self-regulation, cooperation, and positive behaviour.

The developed system of criteria, indicators, and levels (26 indicators) provides an opportunity to purposefully and systematically assess the dynamics of children's virtue manifestations before and after the pedagogical intervention, as well as to analyse differences in pedagogical impact across various educational environments, including sports lessons and extracurricular education settings. The system enables the integration of virtue understanding into different learning domains within preschool education.

The model and the developed methodological solutions are age-appropriate, accessible without specialised technical equipment, and suitable for implementation in inclusive education contexts. The results of the study provide educators with practically grounded recommendations for integrating virtue education into physical activities, ensuring a coherent approach to fostering children's behavioural self-regulation, mutual respect, participation, and responsible action.

The developed JPBPA model may serve as a supportive instrument for implementing the objectives of the *Skola 2030* educational reform, promoting the unity of learning and upbringing within children's activity in preschool education.

Theses Submitted for Defence

Thesis 1. Judo-philosophy-based physical activities (JPBPA) promote the development of **virtue** understanding and virtue manifestations (respect, friendship, honesty, participation) among children aged 5–6 years, improving indicators of socio-emotional self-regulation and cooperation, as evidenced by comparative results obtained before and after the pedagogical intervention in preschool and extracurricular education settings.

Thesis 2. The developed and pedagogically validated JPBPA model functions as a structured pedagogical mechanism in which clearly defined rules, repetition, cooperation-based activity, and the teacher's example generate positive changes in children's behaviour, reducing manifestations of aggression and fostering the consolidation of positive behavioural norms in preschool age.

Thesis 3. The dynamics of children's virtue manifestations differ depending on the educational environment and pedagogical approach, as demonstrated by a comparative evaluation across five groups of children, revealing the higher effectiveness of JPBPA compared to physical activities implemented without a structured virtue education framework.

Thesis 4. The developed system of criteria, indicators, and levels ensures an objective and reproducible assessment of children's virtue understanding and virtue manifestations, enabling a substantiated analysis of the impact of the pedagogical intervention and supporting

the use of the model as a practical instrument for implementing virtue education in accordance with the objectives of the *Skola 2030* educational reform.

Limitations of the Study

The scope of the doctoral research is defined by the selected research object – virtue education through judo-philosophy-based physical activities (JPBPA) for children aged 5–6 years in preschool and extracurricular education.

The study was conducted within a specific socio-pedagogical context – a sports school (VZSS) and a preschool education institution (PEI). It analysed the dynamics of children's virtue manifestations before and after the pedagogical intervention and compared results across groups with differing lesson regularity and varying prior experience in judo training (0, 1, and 2 years). The research focused on four virtues – friendship, respect, honesty, and participation – grounded in the principles of judo philosophy and the *Skola 2030* framework. Other aspects of virtue development were not examined in depth.

The pedagogical intervention in the preschool setting was implemented over a six-month period with differing frequencies of sessions (twice per week and once per week), allowing for the assessment of virtue manifestation dynamics within a defined timeframe, but not for the evaluation of long-term effects.

In the empirical component, a combined diagnostic approach was employed, including the author-developed VAOS (Virtue Assessment Observation Scale), as well as the methodologies of Kalinina, Koseleva, and Dermanova. Virtue manifestations were assessed based on behavioural indicators, pedagogical observation, and situational analysis. The sample size was limited to the specific PEI and VZSS groups involved in the study, which defines the boundaries of result interpretation and necessitates caution when generalising the findings to broader educational contexts.

1 Research Methodology, Materials, and Organisation

1.1 Methods Used in the Study

Analysis of Scientific Information Sources: The theoretical framework of the Doctoral Thesis is based on a comprehensive review and analysis of scientific literature. A total of 298 sources were used in the preparation of the dissertation, including 46 in Latvian, 212 in English, 10 in German, 10 in Russian, and 3 in other languages.

Pedagogical Pilot Study in VZSS (Diagnosis, Initial Level)

During the pilot study phase at the Vsevolods Zelonijs Sports School (VZSS), the initial diagnosis of children's virtue manifestations – friendship, respect, honesty, and cooperation – was conducted in three age- and preparedness-homogeneous groups (5–6 years). The diagnostic process included direct observations as well as age-appropriate psychological instruments (Blair & Raver, 2021) based on internationally validated scales for assessing socio-emotional development (Denham et al., 2012; Thompson, 2018; Bierman & Motamedi, 2015).

The integration of qualitative and quantitative data provided substantial empirical insights. Observations were carried out in the children's regular sports training environment, ensuring natural behavioural expression and reliable data on patterns of social interaction (Stucke & Doebel, 2024; Brush et al., 2022). The initial baseline level obtained at this stage was used as a reference point for subsequent comparison with the results of the pedagogical intervention.

Pedagogical Intervention Phase in Preschool Education Institutions (Pedagogical Validation of JPBPA Content)

The intervention phase was organised at Riga Preschool Education Institution No 252 (PII), where adapted judo-philosophy-based physical activities (JPBPA) content was implemented in two groups. Within the structure of health and physical activity lessons, JPBPA was integrated in 5–7 minute segments, taking into account time, environmental, and developmental constraints. The implementation of the method involved pedagogical situations and movement-based tasks (games, pair exercises, relays) aimed at promoting the development of friendship, respect, honesty, and cooperation, grounded in play-based learning and children's initiative (Fleer & Veresov, 2018; Veresov, 2022). The sessions were conducted without authoritarian control or external pressure, creating an environment consistent with contemporary child-centred approaches and principles of natural learning (Zosh et al., 2022).

The development of the method was based on international pedagogical experience regarding the effective integration of social-emotional learning (SEL) and virtue education into movement-based activities (Izumi-Taylor & Ito, 2015; Takizawa et al., 2023). During the intervention phase, a structured system of exercises suitable for the preschool environment and for different levels of children's preparedness was developed (Krauze et al., 2025a; 2025c). To evaluate changes, a set of psychological tests and observational methods was employed, enabling the identification of the dynamics of children's virtue development (Blair & Raver, 2021; Bierman & Motamedi, 2015).

Results Analysis and Group Comparison

During the results analysis stage, the effectiveness of the DFBFA methodology was evaluated by comparing the level of children's virtues – friendship, respect, honesty, and participation – before and after the implementation of the content in the preschool education institution (PII). At this stage, the same observation and diagnostic methods that were applied in the pedagogical pilot study at VZSS were used, ensuring data comparability across the five study groups (Krauze et al., 2025a; Brush et al., 2022; Denham et al., 2012).

In the statistical analysis, considering the ordinal scale of the data and the small sample size, nonparametric methods were used – the Wilcoxon test, Mann-Whitney test, Fisher-Freeman-Halton test, and Kruskal-Wallis test – which provide an objective and reliable assessment of changes in the development of virtues (Križalkovičová et al., 2024; Kowalczyk et al., 2022). The application of these methods made it possible to identify statistically significant trends and to evaluate the impact of the methodology in different pedagogical contexts - both in the short term in PII and in the long term in VZSS (Garbeloto et al., 2023; Bradić, 2023).

The results analysis also included an evaluation of long-term changes, reflecting the stability of children's social behaviour and the sustainability of the practical expression of virtues in everyday activities (Krauze et al., 2025b). Such an approach enabled the analysis not only of immediate changes following the implementation of DFBFA, but also of its influence on the socio-emotional climate of the group, patterns of cooperation, and interpersonal relationships among children.

By comparing five study groups – three VZSS pilot study groups with different levels of experience in judo training (0, 1, and 2 years) and two PII intervention groups with different lesson frequency (twice per week and once per week) – the influence of training frequency, physical activity intensity, and pedagogical environment on the development of virtues was evaluated (Križalkovičová et al., 2024; Maussier et al., 2025; Krauze et al.,

2025a). The results of the analysis led to the conclusion that systematic, long-term practice (VZSS) ensures a higher level of virtues, whereas short-term but regular DFBFA sessions in the PII environment significantly promote the dynamics of virtue development over a six-month period.

Such a research structure – from the development of the method to its approbation and comparative analysis – corresponds to contemporary educational requirements and empirical research standards, emphasizing data reproducibility, pedagogical validity, and a child-centred approach (Creswell & Creswell, 2024; Križalkovičová et al., 2024; Krauze et al., 2025a).

1.2 Development of Pedagogical Model and Structure Of Physical Activities

Development of the Research Model

In the first stage, the conceptual framework of the study was developed, incorporating both the theoretical foundation and a practical pedagogical method model based on the philosophy of Jigoro Kano (Krauze, 2024; Krauze et al., 2025b). This model provided a structured framework of pedagogical situations and tasks aimed at fostering the core virtues – friendship, respect, honesty, and cooperation – in preschool-aged children (Lickona, 1992; Jones & Kahn, 2021; Brush et al., 2022; Bradić, 2023; Garbeloto et al., 2023).

The development of the model also considered conditions for children's socio-emotional learning, grounded in current research findings (Xu & He, 2025; Jones & Kahn, 2021; Anderson-Butcher et al., 2021; Thümmeler et al., 2022).

Development of the Structure of Physical Activities for Preschool Education Institutions

To ensure the implementation of the pedagogical model in preschool education institutions, a specifically adapted structure of Judo-Philosophy-Based Physical Activities (JPBPA) was developed. It includes games and movement tasks that promote the development of the core virtues – friendship, respect, honesty, and cooperation. Physical activities were adapted in accordance with children's age characteristics and the principles of play-based learning, ensuring natural engagement and positive social interaction in pair and group work.

Such a structured approach enables the integration of virtue education into the acquisition of fundamental motor skills and strengthens the applicability of the pedagogical model across diverse preschool education contexts (Krauze et al., 2025a; Krauze et al., 2025b). The physical activities were further adapted to children's developmental characteristics and to the need to ensure harmonious sensorimotor load (Križalkovičová et al., 2024; Kowalczyk et al., 2022).

The structure of physical activities was designed to:

- support principles of play-based learning;
- ensure natural engagement in movement and play activities;
- promote socialisation in pairs and small groups;
- strengthen cooperation, empathy, and self-regulation skills (Bradić, 2023; Garbeloto et al., 2023; Maussier et al., 2025).

Such structured content ensures that physical activities function simultaneously both as an instrument for the development of fundamental motor skills and as a pedagogical means for fostering virtue.

1.3 Modelling, Development of Criteria Scales and Psychological Tests

Modelling

Several stages were carried out in the modelling process. First, theoretical research findings on the fundamental principles of judo, the sources of children's virtue education, and the possibilities for their implementation through physical activities in preschool age were compiled (Krauze, 2024; Krauze et al., 2025b).

In the next stage, the interrelationships between the objective and subjective components of the theoretically substantiated JPBPA model for virtue education were analysed.

Subsequently, the model content was piloted during the pedagogical intervention phase with children participating in VZSS extracurricular education. The results obtained during the pedagogical intervention were summarised, and an analysis of expert evaluations was conducted.

In the following stage, the model was tested in sports lessons within the Health and Physical Activity learning domain in preschool education institutions (PEI).

Finally, the model was refined and supplemented with significant interpretations of objective and subjective components identified during the piloting and evaluation process.

Development of Criteria Scales for the Assessment of Change

The empirical assessments of children were based on the virtues selected in the theoretical analysis, along with their corresponding criteria and indicators. For children aged 5–6 years, four virtues were applied: friendship, respect, honesty, and participation.

For the empirical study, in order to determine the level of acquisition of virtue-related qualities, the following were developed:

- 11 criteria (benevolence; interest in exploration; expression of emotions; communication skills; politeness in interaction; ability to complete assigned tasks; empathy; truthfulness; adherence to rules; openness; participation in activities);
- 26 virtue indicators for JPBPA in preschool education: within the extracurricular judo sports programme for preschool children and within sports lessons of the Preschool Education Institution (PEI) Health and Physical Activity learning domain (see Table 1.1).

Table 1.1

Criteria, indicators, and levels of virtue in children aged 5–6 years

Virtue	Criteria	Indicators
Friendship	1. Benevolence	1) Comforts or encourages 2) Generously shares personal equipment 3) Provides mutual assistance during exercises
	2. Interest in exploration	4) Curiosity expressed through eye contact 5) Curiosity expressed through verbal interaction
	3. Expression of emotions	6) Eagerness to acquire skills 7) Joy in achievement 8) Surprise in response to an unexpected event
	4. Communication skills	9) Ability to reach agreement with a partner 10) Teamwork toward a common goal
Respect	5. Politeness in interaction	11) Greets by bowing (rei) 12) Polite conversation 13) Ability to listen without interrupting
	6. Responsibility for entrusted tasks	14) Takes care of equipment 15) Strives to complete the task
	7. Compassion	16) Expresses compassion verbally 17) Demonstrates compassion through gestures
Honesty	8. Truthfulness	18) Displays attitude during activities 19) Expresses gratitude for support
	9. Compliance with rules	20) Follows rules during exercises 21) Follows rules during games
	10. Openness	22) Reflects on what has been seen and heard 23) Speaks confidently 24) Describes events in a varied and detailed manner
Participation	11. Participation in activities	25) Engages in activities 26) Involves others in activities

For each indicator, three levels were defined: high level (3 points), medium level (2 points), and low level (1 point).

Observation

Observation was conducted to obtain baseline data on the factors influencing virtue education within judo-philosophy-based physical activities (JPBPA). It was implemented through video analysis of children's pedagogical-psychological processes and motor activities

at the Professional Orientation Education Institution “Vsevolods Zeļonijs Sports School” (VZSS) in three extracurricular education groups (VZSS-1, VZSS-2, VZSS-3), comprising children aged 5–6 years. The observation was carried out in accordance with the criteria and indicators developed by the author (Krauze et al., 2025b).

Observation as a research method ensures the systematic collection of information for subsequent theoretical analysis and empirical interpretation, as well as enabling verification of the proposed hypothesis. It is particularly essential when a comprehensive understanding of ongoing processes and children’s behaviour in a natural environment is required (Geske & Grīnfelds, 2006; Križalkovičová et al., 2024; Kowalczyk et al., 2022). As noted by Aronfreed (1969), children’s virtuous behaviour is frequently acquired through imitation and observation, by reproducing socially positive actions and emotional responses observed in adults and peers.

Observation represents a specifically organised and documented form of perception that may be direct or indirect, internal or external, participant or non-participant. In the present study, observation was applied within pedagogical situations, which constitute a contemporary organisational form of preschool education. Pedagogical situations enable the modelling of real-life interactions and behavioural patterns, thereby fostering children’s social skills, self-regulation, and cooperation (Križalkovičová et al., 2024; Bradić, 2023; Garbeloto et al., 2023). The observations revealed the dynamics of virtue development among preschool-aged children during purposeful pedagogical activity, implemented through the author-developed DFBFA methodological framework in accordance with the defined criteria and indicators.

Survey and Structured Discussions

Structured discussions (Jurgena, 2010) are characterised as a means of exploring pedagogical phenomena through conversation conducted in natural settings – during training sessions, after classes, or in other everyday situations involving children. This is considered a subjective research method, as it reveals respondents’ personal opinions, which may differ from objective reality. Discussions are purposefully and systematically organised, following an individualised approach and maintaining pedagogical tact. Questions may be either direct or indirect; however, their formulation must take into account children’s temperament, personality characteristics, and developmental level. It is recommended to select questions that directly relate to the research problem, as well as supplementary questions that help maintain the continuity of the conversation.

In the present study, structured discussions were purposefully organised during the pedagogical intervention phase in the preschool education institution (PEI) to clarify children's understanding of virtue acquisition. The discussions took place immediately after the completion of JPBPA tasks within the Health and Physical Activity learning domain sessions at Riga 252nd PII. During the conversations, children independently reflected on their experiences of acquiring virtues in JPBPA sessions.

Through direct and age-appropriate questions, the discussions explored children's interest in understanding virtues, their level of knowledge, and their comprehension of the significance of virtues in everyday situations. The content of the discussions corresponded to the virtue education model and was developed in accordance with the regulations of the Cabinet of Ministers of the Republic of Latvia (Ministru Kabineta, 2018) and the competency-based approach requirements of *Skola 2030* (Valsts izglītības satura centrs [VISC], 2019). The list of questions is included in Appendix 10.

Questionnaire Survey

A questionnaire survey was conducted to identify the opinions of nine experts regarding the virtue education model, the criteria and indicators for determining the level of children's virtue development, as well as the necessity of developing JPBPA content for preschool-aged children. Based on the experts' recommendations, the virtue education model was refined, and the criteria and indicators for assessing the level of virtue development were further improved.

In accordance with the experts' recommendations, the structure of the JPBPA virtue education content, its thematic sequence, and the implementation plan for work in preschool education institutions (PEI) were developed. Additionally, a set of JPBPA activities applicable to the Health and Physical Activity learning domain was defined (Krauze et al., 2025b).

Expert Inclusion Criteria:

- LSFP-certified coaches;
- Preschool Education Institution (PEI) Health and Physical Activity Learning Area (HPALA) sports teachers;
- PEI group teachers with at least three years of professional experience.

Participants in the Expert Survey:

- Three International Judo Federation (IJF) Level 2 and Category B coaches;
- Three PEI HPALA sports teachers;
- Three PEI group teachers with higher pedagogical education.

In total, nine experts participated in the survey, ensuring a professionally diverse and methodologically grounded evaluation of perspectives related to virtue development.

Psychological Tests for Assessing Changes in Children's Behaviour

Three psychological tests were employed in the study, adapted to the developmental characteristics of children aged 5–6 years. The tests were selected to assess children's socio-emotional development and direct changes in the manifestation of core values closely associated with virtues – respect, honesty, friendship, and mutual assistance.

The psychological tests enabled the quantitative assessment of development in the following domains: empathy, self-control, emotional self-regulation, social skills, and prosocial behaviour.

The applied tests (Križalkovičová et al., 2024; Kowalczyk et al., 2022; Maussier et al., 2025) provided the opportunity to objectively evaluate the dynamics of children's behaviour at different stages of the research. They served as an important methodological instrument complementing the author-developed observation scale and allowed for the statistical substantiation of changes in the level of children's virtue development.

The data obtained from the psychological tests provided a reliable quantitative basis for analysing changes in each indicator and supported the interpretation of results in both the pilot study (VZSS) and the pedagogical intervention (PEI) stages.

Testing

Testing was conducted to assess children's understanding of virtue, providing objective information about the child's level of virtue development at a given point in time. Testing was used as a diagnostic procedure to determine children's knowledge, understanding, and ability to identify situations and behavioural patterns related to virtue.

Testing methods were applied both during the pedagogical pilot study phase in the extracurricular education institution VZSS (VZSS-1, VZSS-2, and VZSS-3 groups, each consisting of 30 boys) and during the pedagogical intervention phase in the preschool education institution (PEI-4 and PEI-5 groups, each consisting of 12 boys). This ensured the possibility of objectively diagnosing children's understanding of virtue in both research settings and comparing the obtained results. Testing complemented observational data and psychodiagnostic results, forming a comprehensive understanding of children's virtue comprehension and developmental dynamics. Tests were designed with verifiable questions or tasks that required clear and unambiguous responses and could be completed within a short period of time, or in some cases involved longer-term practical assignments. Tests differed in their application for individual and group use.

In the study, psychological tests were used to examine the understanding of virtue (respect, friendship, honesty, and participation) among children aged 5–6 years:

1. R. Kalininas (Калинина, 2011) psychological test “Plot Pictures” to determine the level of development of the child’s emotional attitude toward friendship.
2. Dermanovas (Дерманова, 2002) methodology “Complete the Sentence”, used to identify the observed attitude toward honesty.
3. Koselevas (Кошелева, 2003) diagnostic methodology “Study of Mutual Assistance among Preschool Children in Cooperative Activity” to examine children’s mutual assistance in cooperative activities.

R. Kalinina’s (2011) Psychological Test “Plot Pictures”

The ability to distinguish good from bad is essential in interpersonal relationships. The preschool period is characterised by intensified socialisation, during which the child learns to cooperate with others without violating personal boundaries. To assess a child’s understanding of virtue, R. Kalinina’s methodology “Plot Pictures” is applied. This method examines not only cognitive development (knowledge of moral norms) but also the emotional dimension, which is reflected in the child’s adherence to these norms (Калинина, 2011).

Psychologists note that at the age of 5–6 years, children develop an understanding of concepts such as kindness, respect, friendship, politeness, and honesty through activity (Grazzani et al., 2018; Križalkovičová et al., 2024; Kowalczyk et al., 2022; Bradić, 2023; Maussier et al., 2025). This methodology allows for the identification of the child’s knowledge related to the aforementioned concepts of virtue.

Assessment is conducted using cards depicting peers’ positive and negative actions (Appendix 11). Testing is carried out individually and verbally in order to record the child’s emotional response (Appendix 12). No strict time limit is set for the administration of the test; however, the child’s responses should fall within the limits of their perceptual abilities. The following instructions are recommended: “In front of you are cards with pictures showing different actions by children. Take a card that shows a good action and place it on one side of the surface, and place a card showing a bad action on the other side. Explain why you think so.”

It should be noted that individual responses are not evaluated separately; rather, the child’s answers are assessed as a whole. A result of 3 points corresponds to an age-appropriate level, indicating that the child’s emotional reaction is adequate and that their understanding of virtue has reached a sufficient level. A score of 2 points is considered satisfactory. If the child experiences significant difficulty in completing the task, a score of 0–1 point is assigned.

This methodology is an effective tool for identifying virtue in preschool-aged children.

The test is based on I. Dermanova’s methodology “Complete the Sentence”

Dermanova’s (Дерманова, 2002) methodology “Complete the Sentence” was used to determine the level of development of preschool children’s virtues – mutual assistance, respect, honesty, and friendliness. The method makes it possible to assess how children resolve problem situations, explain, and evaluate the actions of others.

During the implementation of the method, the child is invited in an individual conversation to complete sentences that reflect socially significant situations. In the present study, an adapted version of Dermanova’s methodology was applied, in which the original narrative-based format “Complete the Sentence” was modified into a simplified sentence-completion format in order to enhance children’s comprehension of the responses and to adapt the tasks to the cognitive characteristics of preschool age.

The child is instructed: *“I will tell you a short sentence, and you should finish it with your own idea”*. Subsequently, four sentences (in any order) are read to the child, and the responses are recorded in the observation protocol (see Appendix 13). The analysis of the results provides information about children’s understanding of virtues and the level of their development (see Appendix 14).

The methodology was used to examine children’s understanding of virtues – friendship, honesty, mutual assistance, and respect – as well as their ability to recognise and interpret these virtues in everyday social situations.

A. Koseleva’s (Коселева, 2003) methodology “Study of Mutual Assistance among Preschool Children in Joint Activity”

Within the implementation of DFBFA, the teacher applies paired tasks. Their primary objective is to help a partner correctly perform a task or exercise and to foster virtue. Each child’s (Appendix 15) attitude and cooperation with other children during the sessions are recorded in a protocol. The assessment results obtained through the test were used in the development of a virtue education model intended for preschool education.

Ethical Principles of the Study

The study was approved by the LSPA Ethics Committee (No. 3/51813 of 31 May 2024) (see Appendix 1). All research procedures complied with the standards of BERA (2018), UNESCO (2021), and international practice in research involving children. Participation was voluntary and based on written parental consent. Children were involved in a familiar, emotionally safe, and comfortable environment. The methodology included a pedagogical intervention; however, it did not interfere with the educational process in

a manner that could pose any risk to children's physical or emotional well-being. The intervention was implemented in accordance with age-specific characteristics, in a play-based format, and was aligned with existing preschool education requirements. The pedagogical intervention affected only the educational content and forms of interaction, without influencing children's physiological processes or daily routines. All tasks were appropriate to the children's developmental level, did not cause overload, and did not differ from regular movement-based activities in preschool.

Information about the children was processed anonymously, ensuring confidentiality and compliance with data protection requirements at all stages of the study.

Analysis of Scientific Literature

Within the framework of the first research objective, an analysis of scientific and methodological literature was conducted, linking it to NCE methodological recommendations and the regulatory documents of the Cabinet of Ministers of the Republic of Latvia regarding virtue education for children aged 5–6 years and the implementation of the JPBPA approach. The literature analysis enabled the identification of objective and subjective components of virtue education and their interrelationships within children's socio-emotional development. Literature addressing children's virtue education and the impact of JPBPA on the formation of core values – respect, friendship, honesty, and participation – was examined.

The study also evaluated the pedagogical potential of judo philosophy, with particular emphasis on the ideas of judo founder Jigoro Kano and their alignment with the methodological guidelines of *Skola 2030* and the requirements for virtue education established by MK (2018). The extracurricular education environment (VZSS) and the preschool education setting (PEI, HPALA) were analysed in terms of their potential to foster virtue-related qualities in children aged 5–6 years.

It was established that the majority of scientific publications on judo focus primarily on children's physical development, while virtue education is addressed only indirectly. Therefore, priority was given to sources related specifically to virtue education in preschool age and to the potential of JPBPA to promote the development of virtue-related qualities. Based on the synthesis of insights reflected in the literature, the virtues examined in the study were refined, and criteria and indicators for determining their level of acquisition in the empirical phase were developed (Krauze et al., 2025b).

On the basis of the scientific literature analysis, a theoretically grounded model of virtue education within the JPBPA framework was developed, and criteria and indicators for determining children's virtue levels in preschool education were defined. The model

conceptually structured the objective and subjective components of virtue formation, providing for their empirical verification in subsequent stages of the research.

As a result of the empirical intervention, the model was refined and structurally improved based on the data obtained regarding the dynamics of children's virtue development in PEI and VZSS environments.

The structure of the developed theoretical JPBPA model reveals the interaction between objective components (pedagogical environment, methods, organisation of physical activities) and subjective components (knowledge, attitudes, skills, experience, self-regulation, emotional responsiveness) in the process of virtue formation among children aged 5–6 years. The model identifies four professional positions of the teacher: direct guidance, indirect pedagogical influence, consultative approach, and equal partnership. The teacher organises physical activities in the form of play, creating situations in which the child independently evaluates their actions and demonstrates a virtue-based position. The model is grounded in the principles of judo philosophy (*Seiryoku Zenyo, Jita Kyoie*), the value orientations of *Skola 2030*, and the regulatory documents of the Republic of Latvia. Virtues are conceptualised as an integrated personality quality formed through the interaction of respect, friendship, honesty, and participation.

Thus, the theoretically developed model provided a conceptual framework for the pedagogical intervention and for the empirical verification of its effectiveness.

1.4 Mathematical Statistics

To analyse the collected data and evaluate changes in children's virtue development before and after the implementation of the JPBPA methodology, mathematical statistical methods appropriate to the specific characteristics of the data were applied – namely small sample sizes, ordinal scales, and non-normal distributions (Ferr, 2025; Križalkovičová et al., 2024; Kowalczyk et al., 2022).

As all three psychological-pedagogical diagnostic methods used in the study, as well as the author-developed VAOS (Virtue Assessment Observation Scale), generate data on an ordinal scale, only non-parametric statistical methods were employed in the analysis, ensuring the reliability of results given the nature of the data (Dravnieks, 2004; Field, 2024).

To evaluate “before–after” changes within each group, the Wilcoxon signed-rank test was used to determine whether statistically significant increases in ratings occurred after the implementation of JPBPA in PEI and after regular sessions in the VZSS groups (Ferr, 2025; Križalkovičová et al., 2024). This approach is appropriate for small groups ($n = 12$), as in PEI-4, PEI-5, and all VZSS observation groups.

For comparisons between groups, the following tests were applied: the Mann-Whitney U test, to compare rating increases between the experimental group (MG PEI-4) and the comparison group (CG PEI-5); the Kruskal-Wallis test, to compare the five study groups (VZSS-1, VZSS-2, VZSS-3, PEI-4, PEI-5), enabling the identification of statistically significant differences between groups with varying lesson regularity and prior experience (Kowalczyk et al., 2022; Maussier et al., 2025).

To compare frequency distributions, the Fisher-Freeman-Halton exact test was used to analyse the “before” and “after” rating distributions across all five groups and to determine whether changes in the distributions of the four virtues (friendship, respect, honesty, participation) were statistically significant (Brush et al., 2022).

For correlation analysis, considering the ordinal nature of the data, the Spearman rank correlation coefficient was applied to determine relationships between changes in virtues and children’s participation, cooperation skills, and behavioural patterns (Denham et al., 2012; Thompson, 2018). This method was used to identify: intercorrelations between virtues; associations between virtue development and performance of motor tasks within JPBPA; relationships between participation and empathy with manifestations of honesty and respect (Križalkovičová et al., 2024; Krauze et al., 2025a).

The use of non-parametric statistical methods ensured a precise and reliable evaluation of the dynamic profile of children’s virtue development, enabling the identification of both short-term changes in the PII intervention groups and longer-term tendencies in the VZSS training context. This approach corresponds to contemporary requirements and methodological standards in educational research, emphasising validity, comparability, and reliability of data interpretation (Fleer & Veresov, 2018; Veresov, 2022; Field, 2024).

All mathematical statistical calculations were performed at the Institute of Mathematics and Computer Science, University of Latvia.

1.5 Organization of the Study

The study involved five groups of children aged 5-6 years. All participants were boys in order to eliminate the potential influence of the gender variable on the assessment of virtues and motor behavior and to ensure full comparability of data across different pedagogical environments. The selection of groups was carried out in accordance with the objectives of the JPBPA model approbation and the children’s prior experience in movement and sport activities.

Interest Education Institution (VZSS) - Pedagogical Pilot Study

A pedagogical pilot study is a small-scale, exploratory phase of research aimed at testing the suitability of data collection instruments, observation criteria, and procedures prior to the implementation of the main study. It enables the identification of methodological risks, the clarification of instructions, and the verification of the validity and reliability of research instruments in a real educational environment. In educational sciences, pilot studies are considered an essential quality assurance stage that contributes to methodological precision and the credibility of final results (Geske & Grīnfelds, 2006; Špona, 2001, 2022; Jurgena, 2010; Bernhard, 2021; Grava, 2018; Līduma, 2023).

The pilot study included three interest education groups from VZSS that differed in terms of children's prior experience in judo training. Each group consisted of 30 children, of whom 12 were selected for in-depth, systematic observation based on unified criteria (age, gender, health condition, and attendance). Training sessions were conducted three times per week for 45 minutes in accordance with the interest education program.

- VZSS-1 group - children with 2 years of experience in judo training.
- VZSS-2 group - children with 1 year of experience in judo training.
- VZSS-3 group - beginners with no prior experience (12 children included in the observation).

Preschool Education Institution (PEI) - Pedagogical Intervention

In educational sciences, a pedagogical intervention is understood as a purposeful, theoretically grounded, and practice-tested modification of the learning process, during which specific content, methods, or organizational solutions are introduced in order to promote children's development and evaluate resulting changes. The intervention involves a structured process including initial diagnostics, implementation of planned pedagogical activities, and analysis of results. It is based on the fundamental principles of pedagogical practice and the logic of empirical research (Geske & Grīnfelds, 2006; Bernhard, 2021). Such an approach enables purposeful modification of the learning environment and pedagogical interaction, creating development-supportive conditions for the formation of specific skills, virtues, and socio-emotional behavior patterns (Fleer & Veresov, 2018; Veresov, 2022). As a research instrument, pedagogical intervention provides an opportunity to examine the effectiveness of the selected pedagogical model and its impact on children's development across different educational contexts (Līduma, 2023).

The intervention phase included 24 children from one preschool education institution in Riga (PEI No. 252) who regularly participated in the learning area of Health and Physical Activity Learning Area (HPALA). All children participated in the study with written parental

consent, and no absences affecting data quality were identified. Participants were divided into two groups according to the frequency of implementation of physical activities based on judo philosophy (JPBPA) within the lessons.

The duration of each HPALA lesson was 25 minutes, of which 5-7 minutes were devoted to specially structured JPBPA tasks developed in accordance with age-related developmental characteristics and internationally recognized methodological principles (Creswell & Creswell, 2024; Mertens, 2023; Coe et al., 2025). The suitability of the lesson structure for preschool-aged children has been substantiated in the author's previous research on the implementation of physical activities based on judo philosophy in the educational process (Krauze et al., 2025b).

PEI intervention groups:

- MG PEI-4 (experimental group) - JPBPA implemented twice per week.
- CG PEI-5 (comparison group) - JPBPA implemented once per week.

The sample structure ensures methodological comparability with the interest education groups (VZSS), allowing the effectiveness of the JPBPA content to be evaluated in different pedagogical environments and with varying lesson frequency. The selected approach corresponds to findings in developmental psychology and sociocultural theory regarding the importance of the learning context (Pellegrini & Smith, 1998; Fler & Veresov, 2018; Veresov, 2022).

Use of Artificial Intelligence Tools

During the preparation of the doctoral thesis, artificial intelligence tools were used only as technical support instruments. They were applied for linguistic support in formulating individual sentences, structuring the text, refining wording, and accurately translating selected fragments of the work.

All methodological decisions, analysis of scientific literature, processing of empirical data, interpretation of results, and conclusions were carried out independently. The author assumes full responsibility for the scientific accuracy, reliability, and originality of the research.

2 Analysis of the Obtained Results

2.1 Pedagogical Pilot Study for the Assessment of Virtue Manifestations in 5–6-year-old Children in Judo Classes at VZSS

During the pedagogical pilot study phase, an initial diagnosis of virtue manifestations was conducted among 5–6-year-old children at the Vsevolods Zeļonijs Sports School (VZSS), where the extracurricular education programme “Preschool Judo” is implemented.

The programme is grounded in the principles of judo philosophy – *Seiryoku Zenyo* (maximum efficient use of energy) and *Jita Kyozei* (mutual welfare and benefit) – and is oriented toward children’s development through structured movement tasks, pair work, and consistent adherence to rules.

The study involved three groups, each consisting of 30 children (total $n = 90$), comparable in age (5–6 years) but differing in the duration of training experience:

- VZSS-1 – children with 2 years of experience;
- VZSS-2 – children with 1 year of experience;
- VZSS-3 – children without prior experience (beginners).

Classes were organised three times per week, each lasting 45 minutes, allowing for comparison of the level of virtue manifestations depending on the duration of engagement in judo training.

Age-appropriate diagnostic methods were applied (R. Kaļiņina, I. Dermanova, A. Košeļeva), along with the author-developed observation scale VAOS. For in-depth analysis, 12 children were selected from each group based on criteria of regular attendance and active participation.

The analysis of emotional responsiveness and situational evaluation results according to R. Kalinina’s method (“Plot Pictures”) revealed a consistent trend: as the duration of judo training increased, the level of children’s emotional responsiveness also increased. Simultaneously, their ability to choose socially acceptable and virtue-oriented positive responses in situations related to friendship, respect, honesty, and mutual assistance improved.

Quantitative indicators demonstrate a consistent progression:

- children with two years of training experience (VZSS-1) – 74 % emotionally positive responses;
- children with one year of experience (VZSS-2) – 61 %;
- beginners (VZSS-3) – 46 %.

The obtained data confirmed a gradual strengthening of emotional engagement and virtue orientation as experience accumulates in structured training sessions.

Qualitative analysis of the responses revealed significant differences between the groups. Children with two years of experience did not merely select socially desirable behaviour but demonstrated:

- the ability to justify their choices by linking them to another person's emotional state ("he is hurt," "it is difficult for him," "he will feel upset");
- an understanding of social norms and mutual obligations ("friends must help," "one should not act this way");
- a pronounced empathic stance reflecting awareness of a partner's feelings;
- consistency between verbal and non-verbal responses – choices were accompanied by appropriate intonation, facial expression, and gestures, indicating internal acceptance of the virtue-based content in the given situation.

In the VZSS-1 group, integration of emotional and cognitive components was observed: children not only identified the appropriate course of action in a situation but also understood its rationale and emotionally internalised their choice.

In the group with one year of experience, responses were less stable. Children more frequently recognised the virtue-related nature of the situation; however, their explanations were brief, occasionally stereotypical, and emotionally moderate. This suggests an ongoing process of virtue position formation that has not yet reached full stability.

Among beginners (VZSS-3), responses were more often fragmentary or situational. The following characteristics were identified:

- generalised statements without causal explanation;
- difficulty describing another person's emotional state;
- inconsistency between verbal and non-verbal responses;
- orientation toward external norms ("that is what was said," "that is what should be done") rather than internal understanding of the situation.

These features indicate an insufficiently developed emotional component of virtue-based behaviour and a limited ability to analyse situations empathically.

Overall, the findings allow the conclusion that systematic judo training based on principles of cooperation, mutual respect, and regulated partner interaction contributes to the development of:

- emotional sensitivity;
- empathic capacity;
- internal motivation for virtue-oriented action;
- stability of prosocial responses.

In this context, emotional responsiveness is not interpreted as an isolated trait but as a fundamental structural component of virtue-based behaviour, whose manifestations intensify with the accumulation of experience in value-oriented movement activities.

According to the results of *I. Dermanova's methodology "Complete the Sentence"*, it was established that the duration of judo training is directly associated with children's level of virtue understanding and the quality of their reasoning. A higher level of virtuous interpretation in everyday moral situations was more frequently observed among children in the VZSS-1 group with two years of training experience (68 %), less frequently among children with one year of experience (VZSS-2 – 54 %), and significantly less frequently among beginners (VZSS-3 – 39 %).

Analysis of mean scores indicated that the most pronounced categories were honesty (2.76), friendship (2.69), respect (2.55), and mutual assistance (2.47), reflecting the stability of these virtues within the structure of children's consciousness. At the same time, quantitative data were complemented by substantial qualitative differences. Children with longer experience in judo training demonstrated not only formally correct answer choices but also a deeper understanding of situational contexts. They related their decisions to another person's emotional state, recognised potential consequences of actions, considered the partner's perspective, and evaluated situations in terms of fairness and responsibility.

Their responses were more elaborate, logically structured, and emotionally meaningful. Elements of empathy and virtuous reflection were evident, including awareness of another child's emotional experience, the importance of trust, and the consequences of one's actions. Precise virtue-related categories were used, indicating internal acceptance of behavioural norms and their conscious integration into the personal value system, rather than mechanical reproduction of learned rules.

In contrast, children with less training experience provided more laconic or situational responses, with less developed reasoning and weaker connections between emotional experience and virtue-based evaluation. In the beginner group, formal or indefinite answers without clear justification were more frequently identified.

Thus, the obtained data indicate a stronger integration of emotional and cognitive components within the structure of virtue consciousness among children with two years of judo training experience. This suggests a higher level of virtue development, greater awareness, and stability of virtue manifestations in real behaviour, confirming the importance of systematic and philosophically grounded physical activities in promoting virtue development in preschool-aged children.

In the *assessment of mutual assistance and participation in cooperative activities using A. Koseleva's methodology*, it was established that the duration of judo training is directly associated with children's readiness to cooperate and their initiative in providing help to a partner. In the VZSS-1 group (two years of training experience), the coefficient of mutual assistance reached 73 %, while the actual level of help provided was 87 %. In the VZSS-2 group (one year of experience), the respective indicators were lower – 67 % and 79 %. In the VZSS-3 group (without prior experience), the mutual assistance coefficient was 63 %, and the level of help provided was 72 %.

Qualitative observation data indicate that children with two years of experience not only provide help more frequently but also do so independently, without direct teacher instruction. They more quickly identify situations in which a partner requires support, demonstrate readiness to engage in joint activity, and show initiative – for example, offering a hand during balance exercises, holding sports equipment, explaining task execution, and verbally encouraging a partner. These behavioural manifestations are accompanied by emotional engagement and awareness of a shared goal, indicating the consolidation of stable prosocial behaviour patterns and attitudes related to virtue.

In contrast, children without prior training experience more often wait for an external signal or adult instruction before offering assistance. Their participation in cooperative activities is expressed in a more reactive manner – help is provided following a request or reminder, and initiative is less frequently demonstrated. In situations where a partner encounters difficulty, beginners tend to focus on individual task completion and do not always independently recognise the need to provide support.

The obtained results confirm that systematic judo training grounded in principles of cooperation and partnership facilitates a gradual transition from externally regulated behaviour to internally motivated prosocial activity, promoting children's readiness for joint action, mutual responsibility, and empathetic response. Such dynamics reflect the consolidation of practical manifestations of virtue within a structured physical activity environment.

To assess children's behavioural manifestations of virtue, the author-developed observation scale Virtue Assessment Observation Scale (VAOS) was employed. The scale is based on age-appropriate behavioural indicators and internationally recognised criteria of socio-emotional development (Denham et al., 2012; Thompson, 2018; Brush et al., 2022). The methodology includes 26 indicators structured into 11 criteria and grouped into four virtues: friendship, respect, honesty, and participation. The indicators were normalised using a two-step min–max procedure and transformed onto a scale from 0 to 1.

Three independent groups participated in the study (n = 12 in each group): children with two years of judo experience (VZSS-1), one year of experience (VZSS-2), and no prior experience (VZSS-0). For each virtue, medians and interquartile ranges (Q1–Q3) were calculated. Comparative analysis was conducted using the non-parametric Kruskal-Wallis test with Bonferroni correction. Practical significance was evaluated by calculating effect sizes – Cohen’s f (overall effect) and Cohen’s r (pairwise comparisons).

Table 2.1

Descriptive Indicators of Virtue Assessment (Author’s Methodology)

Group	Virtue	Median	Q1–Q3
VZSS 2 years of experience (n = 12)	Friendship	0.802	0.427–1.000
	Respect	1.000	0.903–1.000
	Honesty	1.000	0.917–1.000
	Participation	1.000	1.000–1.000
VZSS 1 year of experience (n = 12)	Friendship	0.688	0.396–0.922
	Respect	0.972	0.792–1.000
	Honesty	0.972	0.667–1.000
	Participation	1.000	0.813–1.000
VZSS no prior experience (n = 12)	Friendship	0.260	0.109–0.734
	Respect	0.292	0.083–0.632
	Honesty	0.083	0.000–0.493
	Participation	0.375	0.000–0.500

The analysis of median values demonstrates a consistent upward trend across all four virtues from the group without experience to the group with two years of training experience. The highest median values in the two-year experience group were identified for the virtues honesty and participation (Me = 1.000), indicating the stabilization of corresponding behavioural manifestations under conditions of prolonged and systematic practice.

Statistical analysis revealed significant between-group differences. In the case of the virtue friendship, a borderline significant result was obtained ($H(2) = 5.961$; $p = 0.051$; $f = 0.453$), and the difference between the no-experience group and the two-year experience group was statistically significant ($r = 0.493$). For the virtue respect, a pronounced effect was identified ($H(2) = 13.612$; $p = 0.001$; $f = 0.798$), with both experience groups demonstrating significantly higher indicators compared to children without prior training experience.

The most pronounced differences were observed for the virtues honesty ($H(2) = 19.097$; $p < 0.001$; $f = 1.096$) and participation ($H(2) = 20.959$; $p < 0.001$), where effect sizes reached high virtues (r up to 0.858 and 0.877). No statistically significant differences were found between the one-year and two-year experience groups, suggesting a relative stabilization of indicators after the first year of systematic practice.

Overall, the results confirm that long-term participation in structured judo training is associated with higher virtue indicators across all four categories. The most distinct group differentiation was observed in the virtues honesty and participation. The one-year experience group occupies an intermediate position, whereas the no-experience group consistently demonstrates the lowest virtues.

The obtained data are consistent with findings from international research demonstrating the impact of structured and cooperative physical activity on the development of socio-emotional competencies. In the present study, this effect was empirically confirmed in relation to judo training within the extracurricular education setting (VZSS). Regular partner interaction, adherence to rules, and the implementation of cooperative tasks contribute to the stable consolidation of virtue-related behavioural manifestations and provide an empirical foundation for subsequent pedagogical intervention in the preschool education environment.

2.2 Expert Evaluation of Necessity and Effectiveness of JPBPA Content in Virtue Education

The expert discussion constituted a significant stage in the refinement of the content of Judo-philosophy-based Physical Activities (JPBPA), aimed at fostering virtue in children aged 5–6 years. Particular attention was devoted to adapting the content to the preschool education environment, where lessons in the domain of Health and Physical Activity last 25 minutes and are conducted twice per week, in contrast to 45-minute sessions in the sports school (VZSS). This required the restructuring of exercise content, intensity, and methodological logic, while preserving the educational and virtue-oriented significance within limited time conditions.

Nine specialists participated in the expert evaluation: coaches with international qualifications (IJF), preschool physical education teachers, and group educators. The majority of experts recognised the JPBPA model as pedagogically substantiated and significant for the systematic development of virtue in children. It was emphasised that the principles of judo philosophy – cooperation, self-regulation, respect, and adherence to rules – are organically integrated into the educational environment and promote the formation of prosocial behaviour.

At the initial stage, several preschool educators expressed caution due to methodological changes associated with the implementation of the *Skola 2030* reform. The new content was perceived as an additional methodological challenge. In cooperation with educators from Riga Preschool Education Institution No. 252, a pedagogical intervention was implemented in two groups of 5–6-year-old children, providing the opportunity to pilot

the adapted JPBPA content and empirically confirm its suitability within a short-session structure.

Experts particularly highlighted the importance of the developed virtue behaviour criteria and indicators, as a unified observation system ensures objective and consistent evaluation of children's developmental dynamics. Coaches noted that elements of judo philosophy traditionally include educational components; however, their operationalisation in the preschool context provides a more structured and empirically assessable approach. Educators acknowledged that clearly defined indicators facilitate the observation of virtue manifestations – friendship, respect, honesty, and participation – within movement-based activities. At the same time, it was indicated that educators without prior experience in judo require additional methodological support for the confident implementation of the model.

The repeated expert evaluation following the pedagogical intervention demonstrated a high level of consensus regarding the effectiveness of JPBPA. Seven out of nine experts assigned the maximum rating to nearly all statements, confirming that the adapted exercises positively influence children's virtue-related behavioural manifestations. It was established that the sessions foster the development of self-regulation, respectful attitudes toward partners, adherence to rules, and cooperation skills. Educators with less experience in judo more frequently selected the response “possibly,” which may be interpreted as a need for additional information rather than as an indicator of conceptual inconsistency.

The expert assessments were consistent with pedagogical observations. After six months of sessions, children demonstrated higher levels of organisation, emotional stability, and engagement in collective activities. Spontaneous manifestations of politeness, gratitude, respect, and mutual assistance were observed. In the group where sessions were conducted twice per week, 71 % of children demonstrated pronounced progress in virtue development, whereas in the second group the corresponding proportion was 65 %, confirming the importance of regularity and systematic implementation.

Thus, the expert analysis confirmed the pedagogical validity of implementing JPBPA in both extracurricular and preschool education contexts. The model is evaluated as an effective instrument for fostering virtue stability, empathy, cooperation, and social responsibility in children aged 5–6 years.

2.3 Initial Diagnosis of Children's Virtue Levels in PEI (Before the Pedagogical Intervention): Methods and Results

In order to purposefully implement the JPBPA content in a preschool education institution and to evaluate the effectiveness of the pedagogical intervention, an initial diagnostic assessment of virtue among 5–6-year-old children was conducted at Riga

Preschool Education Institution No. 252. The study was carried out in coordination with the institution's administration and upon obtaining written parental consent. A total of 24 children participated, ensuring sample comparability in terms of age, gender, and regular attendance. Based on the initial indicators, two comparable groups ($n = 12$ in each) were formed: the experimental group (MG PEI-4), in which JPBPA was implemented twice per week, and the comparison group (CG PEI-5), in which sessions were conducted once per week. The groups were balanced according to age, gender, and initial levels of behavioural manifestations.

The initial diagnostics were conducted using three complementary psychological-pedagogical methods covering emotional, cognitive, and behavioural dimensions, as well as the author-developed observation scale VAOS (Virtue Assessment Observation Scale). This multidimensional approach enabled the analysis of children's emotional attitudes in interaction situations, their understanding and verbalisation of virtue, as well as practical manifestations of virtue in real-life cooperation and mutual assistance contexts. Data processing involved descriptive statistics and Pearson correlation analysis; non-parametric tests (Wilcoxon, Mann-Whitney) were applied to assess changes and intergroup differences.

The assessment of emotional responses in situations related to friendship, respect, honesty, and participation revealed a more pronounced positive dynamic in the experimental group (MG PEI-4). Children in this group more frequently selected behavioural options reflecting cooperation, support, and respect toward peers, and more often justified their choices. The proportion of positive emotional responses in the experimental group reached an average of 72 %, compared to 52 % in the comparison group; the differences were statistically significant ($p < 0.05$). The findings indicate that a higher intensity of JPBPA implementation is associated with increased emotional engagement and empathy in interaction contexts.

The diagnostic assessment of virtue understanding, based on the completion of unfinished sentences, showed that responses demonstrating higher levels of understanding and argumentation (Levels 2–3 combined: 78 %) predominated in the experimental group, whereas superficial responses (Level 1: 47 %) were more common in the comparison group. During JPBPA implementation, children in the experimental group more accurately differentiated behavioural options related to honesty, helping, waiting for one's turn, and cooperative play, and more frequently referred to their personal cooperation experiences in pair and group tasks. This confirms the strengthening of the cognitive component of virtue and its integration with cooperative practice.

The evaluation of mutual assistance and participation in cooperative activities also demonstrated the superiority of the experimental group: initiative in offering help reached 73 % (67 % in the comparison group), while actual provision of help reached 87 % (79 % in the comparison group); the differences were statistically significant ($p < 0.05$). Qualitative observations confirmed that more regular JPBPA practice promotes more stable manifestations of cooperation, self-regulation, and responsibility in joint tasks.

Additionally, behavioural manifestations of virtue were analysed using the VAOS scale, structured around 26 indicators grouped into 11 criteria and four virtues (friendship, respect, honesty, participation). Observations were conducted longitudinally in repeated situations, documenting cooperation, rule adherence, assistance, and emotional support toward a partner. Results were normalised using the min-max method and transformed to a scale from 0 to 1. The analysis revealed positive dynamics across all four virtues, with a more pronounced increase in the experimental group (Δ from +0.35 to +0.47; $p < 0.05$), compared to a more moderate increase in the comparison group (Δ from +0.18 to +0.26). A positive correlation was also identified between indicators of mutual assistance and participation ($r = 0.62$; $p < 0.05$), confirming the integrated nature of virtue formation within cooperative movement-based activities.

Thus, the initial diagnostics and subsequent dynamic analysis confirm that the implementation of JPBPA in preschool education institutions is associated with improvements in virtue manifestations at emotional, cognitive, and behavioural levels. Higher implementation intensity (twice per week) resulted in more pronounced changes compared to a once-weekly format. The obtained results substantiate the pedagogical potential of JPBPA in promoting virtue development among 5–6-year-old children in preschool settings and provide an empirical basis for further analysis of intervention effectiveness.

2.4 Organisation and Implementation of the Pedagogical Intervention (JPBPA) in PEI Health and Physical Activity Learning Area Lessons

The pedagogical intervention, based on the JPBPA content (physical activities grounded in judo philosophy), was implemented in the preschool educational setting with the aim of empirically testing its adaptability and effectiveness within the learning domain of Health and Physical Activity. In contrast to the organisational conditions of the sports school, the duration of lessons in the preschool institution (PEI) was 25 minutes with a strictly structured format, which required adaptation of the JPBPA content while preserving the conceptual logic of the methodological approach.

Two comparable groups of children aged 5–6 years participated in the study ($n = 24$; $n = 12$ in each group). In the experimental group (PEI-4), JPBPA elements were integrated

twice per week (48 sessions per year), whereas in the comparison group (PEI-5), they were implemented once per week (24 sessions per year). The groups were comparable in terms of age, gender, health status, and regularity of attendance, ensuring methodologically sound comparative analysis.

The lesson structure retained the traditional model of the Health and Physical Activity learning domain: introductory phase (3–5 minutes), main phase (15–17 minutes), and concluding phase (3–5 minutes). During the main phase, a thematic JPBPA segment (5–7 minutes) was integrated, aimed at the practical acquisition of virtue – friendship, respect, honesty, and participation – through paired exercises, play-based situations, and modelling of interaction. The concluding phase included reflection, promoting children’s ability to consciously connect their actions with the content of virtue.

The methodological implementation was based on a combination of visual, verbal, and practical methods, ensuring the integrated realisation of movement and virtue components within the pedagogical process.

Table 2.2

Methods of Implementing JPBPA in the Formation of Virtue Concepts

Method	Description	Examples in PEI	Virtue
Verbal methods	Short and structured instructions, purposeful discussion, positive reinforcement	“Bow to your partner”, “Help your friend”	Respect, honesty, self-control
Visual methods	Demonstration, use of symbols and visual materials	Illustrations, emotion cards	Emotional understanding, cooperation
Practical methods	Movement-based games, relays, paired tasks	“Rescue your friend”, “Pass the belt”	Friendship, participation, responsibility
Cooperation-based methods	Work in pairs, partner rotation within structured interaction	Balance tasks in pairs	Empathy, respect
Behaviour regulation methods	Movement control, adherence to rules	STOP signal, breathing exercises	Self-regulation, self-control
Reflective methods	Experience analysis and structured discussion	“When did you help?”, “How did you feel?”	Self-analysis, responsibility

During the period of the pedagogical intervention, the implementation of the JPBPA model within the Health and Physical Activity learning domain of the preschool education institution was refined and systematically structured. The organisation of the content was based on a child-centred approach and on the results of the ascertaining phase, ensuring methodological continuity and manageability of the intervention process.

The intervention complex included 55 pedagogical situations structured into three interrelated blocks:

1. Movement games and team relays (33 situations), aimed at fostering the virtues of *friendship, respect, and participation* through cooperation, adherence to rules, and the achievement of shared goals;
2. Imitative combat and regulated partner interaction tasks (8 situations), promoting *self-control, respect, and controlled behaviour* within structured interaction;
3. Pair exercises and coordination tasks (14 situations), facilitating the consolidation of *helping behaviour, trust, and participation* in joint activity.

Such structuring ensured the systematic integration of virtues into movement-based activity, a gradual increase in the complexity of interaction, and age-appropriate differentiation of tasks for children aged 5–6 years. The organisation of the complex provided for workload adaptation and task variability, which supported a stable dynamic of behavioural manifestations and ensured the implementation of the intervention under pedagogically grounded and controlled conditions (see Table 2.3).

Table 2.3

Content of JPBPA in the Preschool Health and Physical Activity Learning Domain

Block	Subcategory	Number of situations	Pedagogical focus (virtues)
Pedagogical situations (team games and relays)	Games with and without equipment; relays of varying levels of complexity	33	friendship, respect, participation
Simulation of combat and sparring	Regulated partner interaction, controlled contact, adherence to rules	8	respect, honesty, self-control
Exercises in pairs	Balance, coordination, mutual assistance, trust	14	friendship, helping behaviour, participation
Total		55	

The developed structure reflects the logical organisation of the pedagogical intervention and demonstrates a purposeful distribution of content according to types of interaction: team-based, regulated partner-based, and pair interaction. Such structuring ensured a gradual increase in the complexity of movement and social tasks, as well as the systematic integration of virtue into children’s practical activities.

The pedagogical intervention was implemented over the course of one academic year in two groups with differing session intensity: in the main group – twice per week, and in the comparison group – once per week. The difference in session frequency provided an opportunity to analyse the impact of intensity on the dynamics of virtue development and ensured the internal controllability of the study. The monthly distribution plan of sessions and their frequency is presented in Table 2.4.

Table 2.4

**Validation Plan for a Set of Physical Activity Exercises with Judo Elements in
Preschool Education Institutions**

Month	October	November	December	January	February	March
Sessions						
1.	VII/VIII/I X.25/III.10	VII/VIII/IX. 33/I.3	XV.49/X.35/I I.2	VII/VIII/IX.25/ III.10	VII/VIII/IX. 33/I.3	XV.49/X.35/I I.2
2.	VII/VIII/I X.26/III.11	XIV.42/XI.3 7/I.4	XV.50/X.36/I I.3	VII/VIII/IX.26/ III.11	XIV.42/XI.3 7/I.4	XV.50/X.36/I I.3
3.	VII/VIII/I X.27/III.12	XIV.43/ XI.38/I.5	XIII.40/XVI.5 1/II.4	VII/VIII/IX.27/ III.12	XIV.43/ XI.38/I.5	XIII.40/XVI.5 1/II.4
4.	VII/VIII/I X.28/III.13	XIV.44/ XI.39/I.6	XIII.40/XVI.5 2/II.5	VII/VIII/IX.28/ III.13	XIV.44/ XI.39/I.6	XIII.40/XVI.5 2/II.5
5.	VII/VIII/I X.29/III.14	XIV.45/XII. 37/I.7	XIII.41/XVI.5 3/II.6	VII/VIII/IX.29/ III.14	XIV.45/XII. 37/I.7	XIII.41/XVI.5 3/II.6
6.	VII/VIII/I X.30/III.15	XV.46/ XII.38/I.8	XIII.40/XVI.5 4/II.7	VII/VIII/IX.30/ III.15	XV.46/ XII.38/I.8	XIII.40/XVI.5 4/II.7
7.	VII/VIII/I X.31/I.1	XV.47/ XII.39/I.9	XIII.41/XVI.5 5/II.8	VII/VIII/IX.31/ I.1	XV.47/ XII.39/I.9	XIII.41/XVI.5 5/II.8
8.	VII/VIII/I X.32/I.2	XV.48/X.34/ II.1	“Frozen” (unfreeze by bowing)	VII/VIII/IX.32/ I.2	XV.48/X.34/ II.1	“Frozen” (unfreeze by bowing)

No colour With colour PEI-4 group – JPBPA twice per week (48 sessions). With colour PEI-5 JPBPA once per week (24 sessions).

Table 2.4 presents the implementation plan of the JPBPA pedagogical intervention within the academic year, indicating the distribution of sessions by month and the intensity of the intervention in the experimental group (twice per week; 48 sessions) and the comparison group (once per week; 24 sessions). The differing frequency of sessions provided an opportunity to analyse the effect of intensity on virtue dynamics under controlled pedagogical conditions.

The pedagogical intervention demonstrated that systematic integration of JPBPA promotes the formation of stable behavioural patterns. Children showed improvements in self-regulation skills, adherence to rules, cooperation, and empathy. Particular emphasis was placed on the REI ritual (bowing), which was integrated as an element fostering independence and internal discipline.

The model of independence development was implemented based on the principle “I want – I know – I can – I do,” ensuring a gradual transition from teacher demonstration to the child’s independent organisation of activity. Observations confirmed an increase in

children's capacity for reflection, self-control, and conscious virtue-based choice in movement situations.

Thus, the pedagogical intervention empirically confirmed the adaptability and effectiveness of JPBPA within preschool education settings. The integration of judo philosophy into the Health and Physical Activity learning domain ensures not only the development of movement skills but also the formation of core virtues and independence in children aged 5–6 years, providing a methodologically grounded basis for the further implementation of the model within the preschool education system.

2.5 Dynamics of Children's Virtue Development Level Following the JPBPA Pedagogical Intervention in a Preschool Education Institution (PEI)

After the implementation of the pedagogical intervention (see Section 2.3.), a repeated diagnostic assessment of children's virtue development levels was conducted in order to determine the impact of integrating JPBPA content within the preschool educational environment over a six-month period. The dynamic analysis provided an opportunity to compare the baseline indicators (see Sections 2.1–2.2) with the post-intervention results and to empirically evaluate the pedagogical effectiveness of the JPBPA methodology.

The study was carried out from August 2023 to January 2024 in two preschool groups: the experimental group (MG PEI-4), in which JPBPA elements were integrated twice per week, and the comparison group (CG PEI-5), where sessions were conducted once per week. The sample consisted of 24 children aged 5–6 years (12 in each group). All participants regularly attended lessons within the learning domain "Health and Physical Activity".

To ensure methodological consistency, the same diagnostic instruments were used as in the ascertaining phase: R. Kalinina's method ("Plot Pictures"), I. Dermanova's method ("Complete the Sentence"), A. Koseleva's method (assessment of mutual assistance in cooperative activity), as well as the author-developed observation scale VAOS. The use of identical instruments ensured data comparability. Statistical analysis was performed using the Mann-Whitney, Wilcoxon, and Kruskal-Wallis tests. Indicators were normalised on a scale from 0 to 1. Prior to the intervention, the groups were comparable ($p > 0.05$).

The overall analysis revealed a statistically significant positive dynamic across all four virtue categories in both PEI groups. The most pronounced changes were identified in the main group with sessions conducted twice per week. In this group, the increase was statistically significant in all categories, particularly in the virtue of honesty and participation. According to the VAOS scale, median values increased as follows: honesty – from 0.083 to 0.875; participation – from 0.250 to 0.750; respect – from 0.361 to 0.889; friendship – from 0.448 to 0.625. All changes were confirmed using the Wilcoxon criterion ($p < 0.05$).

In the comparison group (once per week), a positive dynamic was also observed; however, the increase was less pronounced. The largest changes were identified in the virtue of respect and honesty (for example, honesty increased from 0.111 to 0.611), yet the final indicators remained lower than those of the main group.

The results of R. Kalinina’s methodology demonstrated a substantial increase in the proportion of emotionally positive responses. In the main group, friendship indicators increased from 62 % to 86 %, respect from 64 % to 90 %, while in the comparison group the respective increases reached 72 % and 76 %. The overall increase in the level of emotional empathy averaged approximately 22 %.

The method of I. Dermanova revealed a significant increase in virtue-based understanding: in the main group, the proportion of morally reasoned responses increased from 58 % to 91 %, and in the comparison group from 52 % to 74 %. The most pronounced changes were identified in the virtue category of honesty.

The results of A. Koseleva’s methodology indicate that the proportion of children demonstrating initiative to help without teacher instruction increased in the main group from 41 % to 83 %, and in the comparison group from 38 % to 65 %. A statistically significant correlation was identified between participation and respect indicators ($r = 0.68$; $p < 0.05$), corresponding to the judo philosophical principle *Jita Kyoei* – mutual benefit and cooperation.

At the final stage of the pedagogical intervention, the dynamics of virtue development were assessed using the author-developed VAOS scale. The study involved 24 children (aged 5–6 years), divided into a main group (twice per week) and a comparison group (once per week). To ensure data comparability, the results were normalised on a scale from 0 to 1. Median values and interquartile ranges (Q1–Q3) for virtue indicators before and after the pedagogical intervention are presented in Table 2.5.

Table 2.5

Descriptive Statistical Indicators for the Assessment of Virtue According to the Author’s Methodology

Group	Virtue	“Before” score		“After” score	
		Median	Q1–Q3	Median	Q1–Q3
CG PEI-5	Friendship	0.354	0.109–0.813	0.542	0.193–0.912
	Respect	0.319	0.194–0.729	0.806	0.236–1.000
	Honesty	0.111	0.000–0.597	0.611	0.236–0.979
	Participation	0.375	0.375–0.688	0.500	0.500–1.000
MG PEI-4	Friendship	0.448	0.146–0.589	0.625	0.396–1.000
	Respect	0.361	0.139–0.701	0.889	0.618–1.000
	Honesty	0.083	0.000–0.708	0.875	0.444–1.000
	Participation	0.250	0.063–0.938	0.750	0.250–1.000

The data presented in Table 2.5 indicate a positive dynamic across all virtue categories in both groups, with a more pronounced increase in indicators observed in the experimental group, where the pedagogical intervention was implemented with greater intensity. The most substantial changes were identified in the virtue categories of honesty and respect. To verify the initial comparability of the groups, an intergroup difference analysis was conducted prior to the pedagogical intervention using the Mann-Whitney U test.

Table 2.6

Comparison of Group Differences in Virtue Assessments Prior to the Intervention

Virtue	Mann-Whitney Test Result		
	U-statistics	p-value	Cohen's r (effect size)
Friendship	66.5	0.755	0.092 (no effect)
Respect	71.0	0.977	0.017 (no effect)
Honesty	68.5	0.843	0.061 (no effect)
Participation	64.5	0.671	0.129 (small effect)

Source: author's calculations.

No statistically significant differences between the groups were identified prior to the pedagogical intervention ($p > 0.05$), confirming their initial homogeneity and allowing subsequent dynamics to be interpreted as the result of differing intensities in the implementation of JPBPA.

Thus, the approbation of JPBPA in the preschool education environment empirically confirmed its pedagogical effectiveness. The integration of judo philosophy principles into physical activity sessions promotes not only the development of motor skills but also the formation of stable prosocial behavioural patterns and virtues, providing an empirically grounded basis for the further implementation of the model within the preschool education system.

2.6 Comparative Analysis of PEI and VZSS Group Results

To objectively evaluate the effectiveness of the JPBPA approach in different pedagogical contexts, a comparative analysis of five groups was conducted: three VZSS groups (with 0, 1, and 2 years of judo training experience; $n = 30$ in each group) and two PEI groups in which the pedagogical intervention was implemented with differing intensity (experimental group – twice per week, $n = 12$; comparison group – once per week, $n = 12$). The comparison allowed for the assessment of the impact of lesson duration and regularity on the developmental dynamics of virtue (friendship, respect, honesty, participation).

Assessment was carried out using a three-level scale (1 – low, 2 – medium, 3 – high level). Considering the differing sample sizes, relative frequencies and non-parametric statistical methods were applied in the analysis; statistical significance was determined at $p < 0.05$.

Data according to R. Kalinina’s methodology (“Plot Pictures”)

To evaluate intergroup differences in the emotional component of virtue, a comparative analysis of level distribution was conducted using R. Kalinina’s “Plot Pictures” methodology. The results are presented in Figure 2.1.



Figure 2.1. Distribution of virtue assessments across groups according to R. Kalinina’s methodology

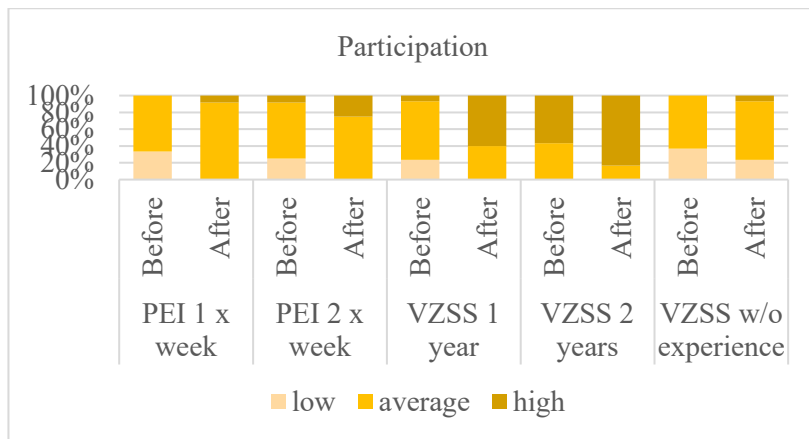


Figure 2.1 continued. **Distribution of virtue assessments across groups according to R. Kalinina’s methodology**

Intergroup differences across all analysed indicators (four virtues before and four virtues after the intervention) are statistically significant (Fisher-Freeman-Halton exact test; in all cases $p < 0.001$). Data visualisation reveals a clear trend: as the duration and intensity of sessions increase, the proportion of medium and high levels of virtue increases. Improvements predominate across all groups, while cases of decline in indicators are isolated.

The most pronounced increase was identified in the VZSS group with one year of experience, whereas the least dynamic change was observed in the VZSS group without prior experience. Among all virtues, the most substantial positive dynamics were observed in the virtue of friendship.

The obtained results confirm the comparability of the short-term pedagogical intervention effect in the PEI setting and the long-term practice effect in the VZSS setting, while simultaneously demonstrating the dependence of virtue indicators on session regularity and duration of experience.

Data according to I. Dermanova’s methodology “Complete the Sentence”

To analyse the cognitive component of virtue, a comparative analysis of results was conducted using I. Dermanova’s “Complete the Sentence” methodology. The distribution of virtue levels before and after the intervention across the five study groups is presented in Figure 2.2.

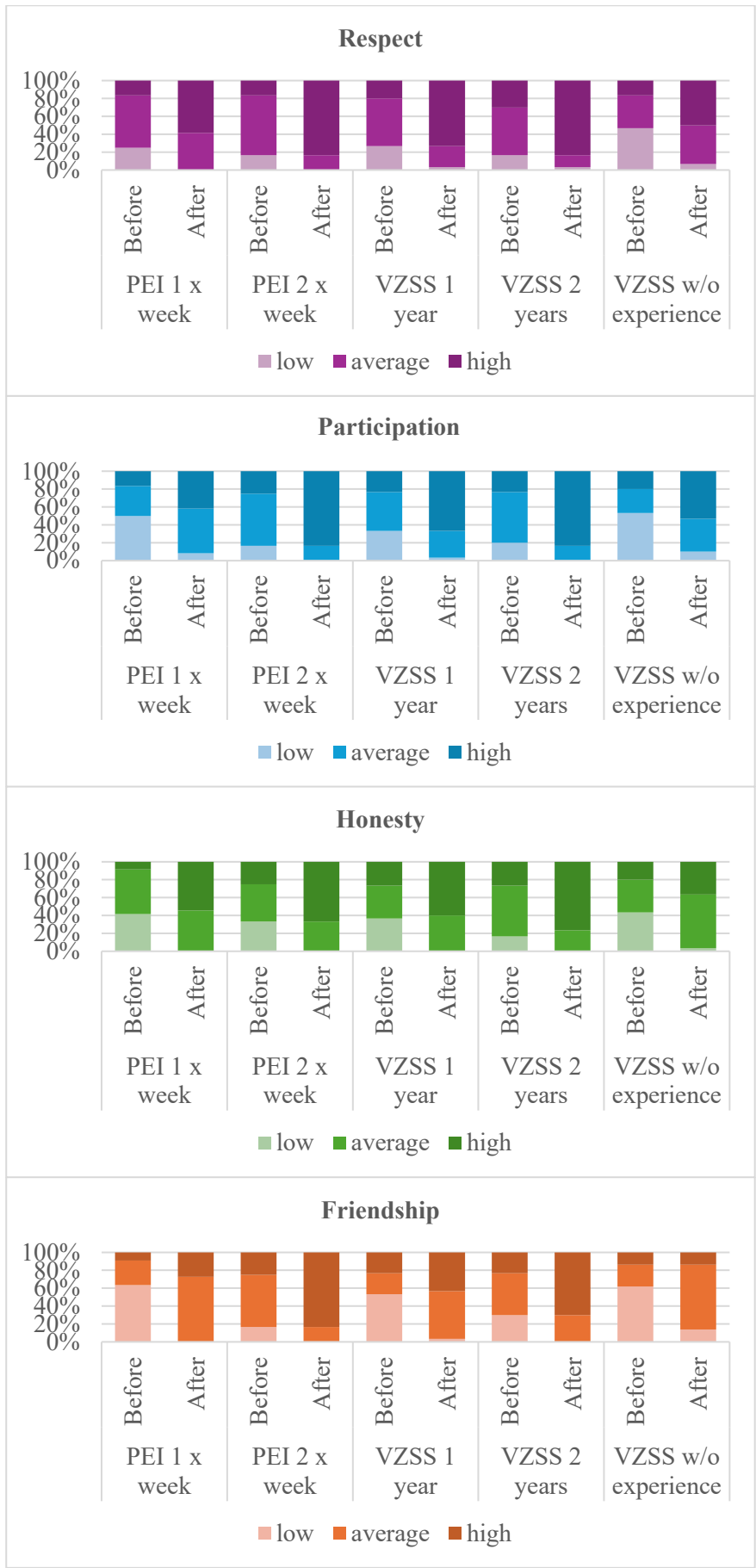


Figure 2.2. Distribution of virtue assessments across groups according to I. Dermanova's methodology

In the majority of cases across all groups, an increase in the level of **virtue** was observed following the intervention; instances of decrease were isolated. Overall, intergroup differences in distribution did not reach statistical significance, with the exception of the virtue of friendship after the intervention ($p < 0.001$).

The greatest increase in indicators was identified in the VZSS-1 group (two years of training experience), whereas the smallest increase was observed in the VZSS group without prior experience. Among all virtues, the most pronounced positive dynamics were found in honesty.

The obtained results are consistent with the data derived from Kaļiņina's methodology and confirm a positive developmental dynamic in the cognitive component of virtue, which is more evident with greater duration or intensity of training sessions.

Data According to A. Koseleva's Methodology (Mutual Assistance in Cooperative Activity)

A. Koseleva's methodology was applied to assess manifestations of mutual assistance, cooperation, and participation across five research groups: three VZSS groups with differing lengths of participation (0, 1, and 2 years) and two PII groups in which the JPBPA pedagogical intervention was implemented with different frequencies (twice and once per week). The assessment was based on systematic observation of help initiative, type of assistance (verbal, physical, emotional), ability to cooperate, and capacity for behavioural self-regulation in joint activity.

The results revealed pronounced intergroup differences. Children with longer JPBPA experience more frequently demonstrated voluntary help initiative and readiness to modify their own actions to support a partner. In the VZSS group with two years of experience, 86 % of children independently offered assistance, whereas in the main PII group this indicator reached 65 %, and in the comparison group 52 %. A similar tendency was identified in indicators of cooperation and stability of joint activity.

The obtained data confirm that manifestations of assistance and cooperation develop as a result of a systematic pedagogical process and intensify with increased duration or intensity of JPBPA sessions. The results of Koseleva's methodology are consistent with the findings obtained through Kaļiņina's and Dermanova's methods and confirm a stable positive dynamic in virtue development under the conditions of JPBPA model implementation.

Comparison of Results Obtained Using the VAOS Observation Scale

The results obtained through the author-developed VAOS observation scale demonstrate a consistent increase in virtue indicators across all groups included in the study. The highest values were identified among children with prolonged participation experience in the VZSS environment, confirming the association between virtue development and the regularity and duration of practice.

Data comparability was ensured through the application of identical assessment criteria across all five groups (VZSS and PEI), allowing for an accurate analysis of the short-term effect of the pedagogical intervention (PEI, 6 months) and the long-term effect of systematic practice (VZSS, 1–2 years).

The average median difference between MG PEI-4 (twice per week) and VZSS-1 (2 years of experience) reached 0.29 points ($p < 0.05$), indicating a pedagogically significant impact of prolonged participation in JPBPA. Descriptive statistics for the obtained variables are presented in Table 2.6.

Table 2.6

Descriptive statistical indicators of virtue assessments according to the author’s methodology

Group	Virtues	“Before” scores		“After” scores	
		Median	Q1–Q3	Median	Q1–Q3
VZSS-1	Friendship	–	–	0.802	0.427–1.000
	Respect	–	–	1.000	0.903–1.000
	Honesty	–	–	1.000	0.917–1.000
	Participation	–	–	1.000	1.000–1.000
VZSS-2	Friendship	–	–	0.688	0.396–0.922
	Respect	–	–	0.972	0.792–1.000
	Honesty	–	–	0.972	0.667–1.000
	Participation	–	–	1.000	0.813–1.000
VZSS-3	Friendship	0.260	0.109–0.734	–	–
	Respect	0.292	0.083–0.632	–	–
	Honesty	0.083	0.000–0.493	–	–
	Participation	0.375	0.000–0.500	–	–
CG PEI-4	Friendship	0.448	0.146–0.589	0.625	0.396–1.000
	Respect	0.361	0.139–0.701	0.889	0.618–1.000
	Honesty	0.083	0.000–0.708	0.875	0.444–1.000
	Participation	0.250	0.063–0.938	0.750	0.250–1.000
MG PEI-5	Friendship	0.354	0.109–0.813	0.542	0.193–0.912
	Respect	0.3194	0.194–0.729	0.806	0.236–1.00
	Honesty	0.111	0.000–0.597	0.611	0.236–0.979
	Participation	0.375	0.375–0.688	0.500	0.500–1.000

Source: author’s calculations.

The most pronounced increase was identified in the virtues of *honesty* and *participation*, where children with longer experience in the sessions demonstrated higher levels of self-regulation and responsibility. Graphical analysis revealed a linear positive trend in the growth of indicators from the PEI groups to the VZSS groups.

To ensure a clear comparison of the dynamics of virtue indicators in the PEI and VZSS groups, comparative median value graphs were developed before and after the pedagogical intervention. The visualisation allows for the assessment of both the initial comparability of the groups and the influence of lesson regularity and duration on the development of *friendship*, *respect*, *honesty*, and *participation* within the framework of JPBPA.

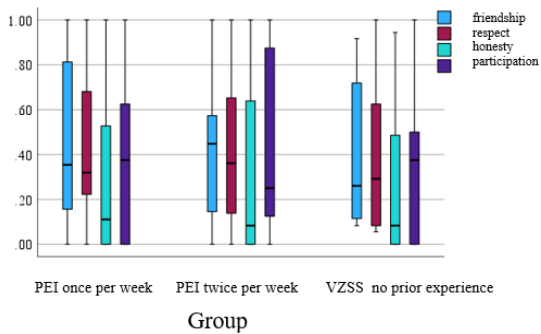


Figure 2.3. Comparison of Virtue Assessments Between the PEI before the Intervention and the VZSS Groups

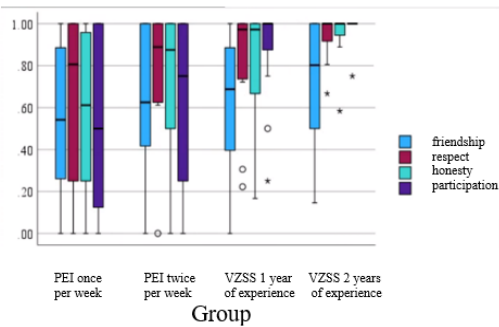


Figure 2.4. Comparison of Virtue Assessments Between the PEI after the Intervention and the VZSS Groups

The comparison of median virtues prior to the pedagogical intervention (Figure 2.3) indicates the absence of significant intergroup differences, confirming the initial comparability of the groups. The observed gradual increase in indicators from MG PEI-5 to VZSS-1 reflects the association between virtue and the duration of participation in classes; *however*, no statistically significant differences were identified before the intervention.

Following the implementation of the pedagogical intervention (Figure 2.4), a pronounced differentiation of indicators between groups was observed. A clear positive gradient emerged: as the frequency and duration of classes increased, the level of virtue also increased. The highest indicators were consistently demonstrated by the VZSS-1 group (two years of experience), followed by VZSS-2 and PG PEI-4, while the lowest values remained in the GM PEI-5 group.

Thus, the visual analysis confirms the statistical conclusions: the intensity and duration of JPBPA practice are significant factors in the development of virtue, whereas the pedagogical intervention in the PEI environment ensures positive, though less pronounced, dynamics compared to long-term practice.

The within-group analysis of the PEI groups (Wilcoxon test) confirmed statistically significant improvements across all four virtues ($p \leq 0.004$ – friendship, respect, honesty; $p = 0.031$ – participation). The effect size was high for the first three virtues ($r \approx 0.54$ – 0.58) and moderate in the case of participation ($r \approx 0.46$). Effect size indicators ($r > 0.5$) demonstrate a pedagogically significant impact of JPBPA, not merely a statistical difference.

In the subsequent stage of analysis, the indicators of the four virtues were compared in the groups where repeated measurements were conducted, namely the two PEI groups that participated in the JPBPA pedagogical intervention with differing lesson regularity (once and twice per week). To evaluate within-group dynamics, the Wilcoxon test was applied, consistent with the nature of the data (ordinal scale and small sample size). The results of the analysis are summarised in Table 2.7.

Table 2.7

Comparison of Differences in Virtue Assessment Before and After Intervention in PEI Groups

Virtue	Group	Wilcoxon test results		
		Z statistic	p-value	Effect size Cohen’s r
Friendship	MG PEI-4	2.816	0.002	0.575 (Large)
	CG PEI-5	2.809	0.002	0.573 (Large)
Respect	MG PEI-4	2.670	0.004	0.545 (Large)
	CG PEI-5	2.673	0.004	0.543 (Large)
Honesty	MG PEI-4	2.807	0.002	0.573 (Large)
	CG PEI-5	2.805	0.002	0.573 (Large)
Participation	MG PEI-4	2.251	0.031	0.459 (Medium)
	CG PEI-5	2.232	0.031	0.456 (Medium)

The results of the Wilcoxon test confirmed statistically significant improvements in all four virtues in both PII groups following the implementation of the JPBPA pedagogical intervention.

For the virtues friendship, respect, and honesty, a high level of statistical significance was identified in both groups ($p = 0.002\text{--}0.004$), along with a large effect size (Cohen’s $r \approx 0.54\text{--}0.58$), indicating a pronounced pedagogical impact. In the case of the virtue participation, a statistically significant increase was also observed ($p = 0.031$); however, the effect size was moderate ($r \approx 0.46$), suggesting a more gradual developmental dynamic of this component.

Regardless of lesson frequency (once or twice per week), the implementation of JPBPA ensured a substantial increase in the indicators of friendship, respect, honesty, and participation. The most pronounced changes were observed in the domains of virtue-based self-regulation and interpersonal interaction.

A comparison of the two PEI groups demonstrated that higher lesson intensity (twice per week) ensured a more pronounced dynamic, particularly in the virtue friendship ($p = 0.014$). No statistically significant differences were found in the remaining indicators; however, median values were higher in the group with greater regularity. Correlation analysis revealed a positive association between emotional engagement and the level of virtues ($r = 0.59$; $p < 0.05$), confirming the significance of the emotional component in the formation of virtue-based behaviour.

Overall, the results indicate that systematic implementation of JPBPA promotes stable development of friendship, respect, honesty, and participation. Even a short-term pedagogical intervention ensures statistically significant changes, while prolonged and regular practice strengthens and stabilises the achieved effect.

The analysis demonstrates positive dynamics across all four virtues following the introduction of JPBPA in the PEI environment, with more pronounced changes identified under higher lesson regularity (twice per week compared to once per week). Graphical interpretation of the results shows a linear upward trend from the PEI groups (short-term intervention) to the VZSS groups (long-term practice), with the highest indicators observed in the VZSS-1 group. The obtained data confirm the cumulative nature of virtue formation under conditions of systematic practice.

Thus, the comparative analysis confirms that JPBPA ensures positive dynamics in virtue development among preschool-aged children, and the stability and magnitude of the effect increase as a result of systematic and prolonged practice. Long-term participation in judo sessions organised in accordance with the principles of judo philosophy is associated with higher virtue indicators and behavioural consistency, allowing the intensity and duration of JPBPA to be regarded as significant conditions for the development of prosocial behaviour and virtue-based self-regulation in preschool age.

2.7 Refinement of the JPBPA Model and Its Structural Rationale

Based on the empirical data obtained in Subchapters 3.1–3.5, the final stage of the study involved structural revision and conceptual refinement of the previously developed JPBPA (Judo-philosophy-based Physical Activities) model. A comparative analysis of the five research groups confirmed that children aged 5–6 years, when engaged in a personally meaningful and emotionally enriched sports environment, accumulate stable experience of virtue-based behaviour, develop cooperation skills, and gradually acquire the ability to reflect upon and evaluate their own actions.

The empirical verification enabled clarification of the structural components of the model and systematisation of its content. An improved version of the JPBPA model was developed, incorporating a systematised set of exercises purposefully oriented toward the development of virtue – friendship, respect, honesty, and participation. The implementation of the model content within the pilot study and pedagogical intervention empirically confirmed its functional effectiveness: structured lesson organisation, consistent adherence to rules, and the cooperative nature of activities promote stable positive dynamics of virtue manifestations.

The theoretical and methodological foundation of the model is grounded in the principles of Jigoro Kano’s judo philosophy (Seiryoku Zenyo and Jita Kyoei), as well as in contemporary research on values-oriented education and the socio-emotional development of preschool children. The core categories selected in the model – friendship, respect, honesty, and participation – are conceptualised as essential components of a child’s moral development at the age of 5–6 years.

In the refined model, the central system-forming element is the child’s independence, manifested through self-discipline, self-control, self-analysis, self-regulation, and self-management. During the research process, independence was identified as an integrative outcome emerging from the interaction between virtue content, movement-based activity, and social experience.

In the model, the central value (see Figure 2.5) is the child’s independence, defined during the study as a purposeful component of personality development, expressed through self-discipline, self-analysis, self-control, self-regulation, and self-management (Krauze et al., 2025a; Krauze et al., 2025b; Križalkovičová et al., 2024).

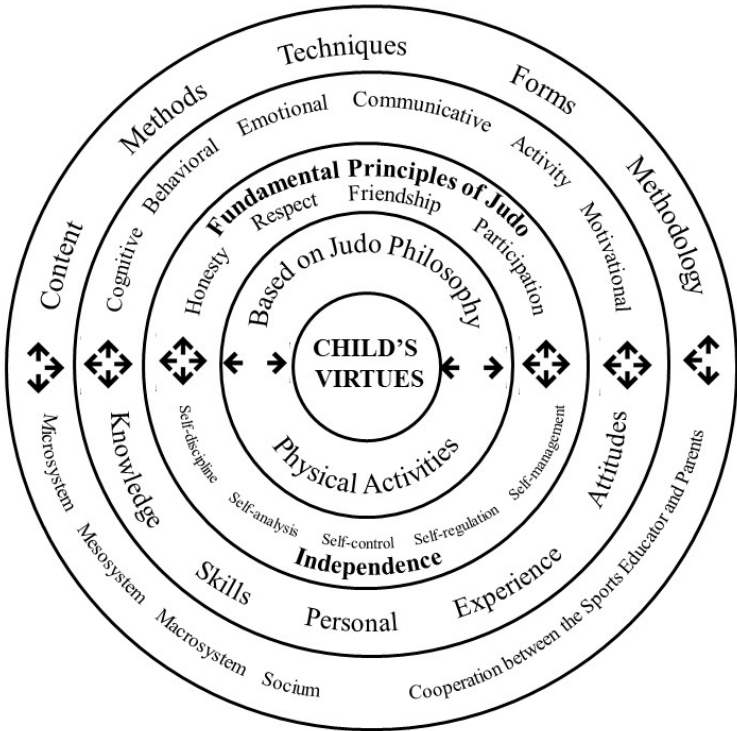


Figure 2.5. Model for Development of Virtue in Children Aged 5–6 Years

The developed model is designed to promote independence among children aged 5–6 years within the context of JPBPA, ensuring the integrated acquisition of virtue and fundamental movement skills.

Structurally, the model comprises two interrelated blocks of factors – objective and subjective.

The **objective factor** includes:

- pedagogical means (content, methods, forms, techniques, and methodologies);
- the educational environment (micro-, meso-, and macro-level environments, as well as the broader social context);
- cooperation between the sports educator and parents;
- developmental dimensions: cognitive, behavioural, emotional, communicative, activity-based, and motivational aspects.

The **subjective factor** includes:

- the implementation of judo principles through internal self-regulation mechanisms;
- the child's individual experience (knowledge, skills, personal virtue experience, and attitudes toward oneself and others).

The interaction between objective and subjective factors ensures the integrated development of virtue, the improvement of motor skills, and the formation of the foundations of a healthy and active lifestyle.

Within the framework of the study, 11 criteria and 26 indicators were developed for the assessment of virtue development, enabling the identification of levels of virtue formation, the analysis of their dynamics, and the examination of interrelationships among indicators. The structure of the criteria is grounded in child-centred education principles and contemporary approaches to social-emotional learning.

Thus, the refined JPBPA model constitutes a theoretically substantiated and empirically verified pedagogical system oriented toward the development of children's independence through the integration of movement activity with virtue-based content. The model corresponds to the requirements of the contemporary educational paradigm and is applicable in preschool educational practice as a structured system for virtue formation in children aged 5–6 years.

2.8 Theoretical and Methodological Interpretation of the Research Results

The obtained results indicate a statistically significant impact of systematically organised physical activity based on judo philosophy on the development of virtue in children aged 5–6 years. The recorded positive dynamics across all four analysed categories – friendship, respect, honesty, and participation – were confirmed using non-parametric criteria

(Wilcoxon, Mann-Whitney, Kruskal-Wallis) and were associated with medium to large effect sizes (Cohen's r), indicating the pedagogically significant strength of the identified impact.

The interpretation of the results allows the JPBPA model to be conceptualised as a structured mechanism for the formation of internal virtue regulation grounded in embodied and activity-based experience. In contrast to verbally discursive forms of virtue education, within this model virtue content is internalised through repeated cooperative interaction, adherence to rules, and assumption of responsibility within a movement-based environment. Consequently, virtue-based behaviour develops not declaratively, but operationally within structured activity-based experience.

The identified positive correlation between participation and respect indicators ($r = 0.68$; $p < 0.05$) indicates the interrelated development of social responsibility and cooperative behaviour. This confirms the systemic nature of virtue formation within value-oriented physical activity conditions. The regularity of the intervention (twice per week compared to once per week) demonstrated more pronounced dynamics, indicating a direct relationship between the intensity of cooperative practice and the level of internalisation of virtue norms.

From a theoretical perspective, the results are consistent with social learning approaches and internalisation concepts, according to which stable behavioural patterns are formed under conditions of repeated social interaction and reflective experience. Within the framework of the study, the teacher fulfilled the role of organiser of cooperative situations, creating conditions for the independent self-regulation of children's virtue-based behaviour. The most pronounced dynamics were observed in the virtue honesty indicators, reflecting the development of self-control and stability of virtue-based choice as essential components of autonomy in child development.

The scientific novelty of the study is manifested in several interrelated aspects. First, the principles of judo philosophy (*Seiryoku Zenyo* and *Jita Kyoei*) were, for the first time, systematically transformed into an operationally structured pedagogical model for preschool-aged children. Second, the author-developed observation scale VAOS was designed and validated, comprising 11 criteria and 26 indicators for assessing virtue development and demonstrating high internal consistency (Cronbach's $\alpha = 0.82$). The obtained internal consistency coefficient confirms the construct integrity of the scale and its suitability for virtue diagnostics in preschool education contexts. Third, the JPBPA model was adapted to the normative 25-minute lesson structure of the Health and Physical Activity learning area, ensuring its practical applicability without requiring specialised sports training for the teacher.

The methodological significance of the study is associated with a combined research design, which included a pilot study in a sports environment followed by a pedagogical intervention in a preschool education institution. This provided an opportunity to compare short-term and medium-term effects and empirically confirm the regularity that the stability of virtue-based behaviour increases with the duration of systematic practice. Thus, the intensity and regularity of value-oriented movement activity are substantiated as significant pedagogical conditions for the formation of prosocial behaviour.

The practical significance of the study lies in the possibility of integrating the JPBPA model within the implementation of *Skola 2030* principles and the development of socio-emotional competencies in preschool age. The obtained results expand the understanding of the potential of physical activity as a means of virtue education and substantiate the inclusion of value-oriented movement forms in educational practice. The model may serve as a methodological foundation for the development of supplementary educational programmes and for the improvement of the Health and Physical Activity learning area in Latvia.

At the same time, the study has objective limitations. The sample size of the pedagogical intervention groups ($n = 24$) limits the possibilities for statistical generalisation. The research was conducted within a specific socio-cultural context in Riga, which requires caution in extrapolating conclusions to other educational environments. The duration of the intervention (six months) does not allow for a full evaluation of long-term effect stability. Furthermore, the dual role of the teacher-researcher in implementing the programme may have influenced the objectivity of observations. Future research should focus on expanding the sample, applying longitudinal designs, and involving independent instructors.

The empirical dataset, statistically confirmed dynamics, and identified effect sizes allow the conclusion that the JPBPA model constitutes a theoretically grounded and empirically verified pedagogical system for the development of virtue in children aged 5–6 years. The stability of the obtained results and their alignment with contemporary value-oriented educational approaches support the consideration of the model as a scientifically substantiated instrument for integrating judo philosophy into the preschool education system.

Discussion

The interpretation of the research results highlights the significance of virtue education in sports pedagogy during preschool age, particularly in a context where natural movement activity is decreasing and the need for purposefully structured educational approaches is increasing. The study is therefore interpreted as a response to a pedagogical necessity: to develop and empirically validate a model that integrates virtue education into movement-based activity rather than treating it as a parallel or supplementary “added value.” Diananda (2025) emphasises that under conditions of contemporary social transformation, the importance of purposefully fostering **virtue** understanding and emotional self-regulation in early childhood is increasing. Preschool age is regarded as a sensitive period for the formation of self-regulation and attitudes toward cooperative norms (Špona, 2022; Nastevič, 2018), which underscores the need to investigate activity-based mechanisms for virtue development.

The analysis of scientific literature indicates that in the majority of studies, physical activity in preschool education is primarily viewed as a means of health promotion, prevention of hypodynamia, and development of motor skills (Janssen & LeBlanc, 2010; Biddle et al., 2019). At the same time, the educational potential of movement activity related to the consolidation of stable behavioural patterns and values is often analysed fragmentarily or remains secondary to health-related objectives. Several studies emphasise that without pedagogical structure, physical activity alone does not guarantee the formation of socially significant personality qualities (Anderson-Butcher et al., 2021). A systematic review (Jadwiszczak et al., 2025) further highlights that outcomes of moral development in physical education contexts depend on pedagogical structure.

The conceptual foundation of the study is judo philosophy, formulated by Jigoro Kano as a unified educational system in which physical activity, rules, discipline, and cooperation are employed for personality development. Kano emphasised that the aim of judo is not only physical improvement but also the development of respect, self-control, and responsibility (Kano, 1932). Contemporary interpretations confirm the pedagogical potential of judo philosophy and its adaptability to educational needs, including work with preschool-aged children (Bennett & Kano, 2009; Bradić, 2023).

An essential aspect of the study is the distinction between the concepts of “morality” and “virtue.” In contrast to the normatively regulatory perspective of morality, which is oriented toward external requirements and behavioural control (Lasmane, 2006), the category of virtue allows for the analysis of stable personality qualities manifested in concrete actions and interactions. Such an approach corresponds to the contemporary pedagogical paradigm,

which focuses on observable child behaviour in real educational situations rather than on the declarative acquisition of norms (Kristjánsson, 2015).

In international educational practice, social and emotional learning (SEL) approaches are widely implemented, aiming to develop children's emotional awareness, empathy, and social skills (Elias et al., 2008; Jones & Kahn, 2021). In comparison with SEL approaches, where educational outcomes are often assessed at a verbal or reflective level, the JPBPA model analyses virtue manifestations in action – within movement situations and interpersonal interaction. Research on emotional socialisation emphasises the role of the adult in mediating children's behaviour; however, behavioural manifestations are less frequently examined within the context of movement-based activities (Denham et al., 2012).

In contrast to the aforementioned approaches, the JPBPA model integrates educational objectives directly into the process of physical activity. Movement is therefore regarded not as a background for education but as a central pedagogical instrument within which virtues are formed and expressed. Research in pedagogy confirms that the educational effect of physical activity depends less on its intensity and more on the quality of pedagogical organisation, lesson structure, and task sequencing (Parry et al., 2024). A particular place in the scientific literature is devoted to studies on the educational potential of judo. Several works emphasise that, when clear rules, rituals, and pedagogical consistency are maintained, judo practice promotes the development of behavioural culture, respect for one's partner, and responsibility in cooperative action (Sterkowicz-Przybycień et al., 2014; Kowalczyk et al., 2022). These findings served as the foundation for the development of the DFBFA model.

A comparative analysis across five groups (PEI and VZSS) allowed for the interpretation of the dynamics of virtue manifestations in relation to the duration of participation and lesson regularity. The identified intergroup differences suggest that prolonged engagement in judo-philosophy-based physical activities contributes to more stable development of virtue manifestations. These differences exceeded what could be explained by comparable age characteristics and similar programme implementation conditions, thereby strengthening the argument regarding the importance of the duration of pedagogical influence. In the criteria of friendship, respect, and honesty, a high level predominated in the group with two years of experience, whereas beginners more frequently demonstrated a medium level. The dynamics of these criteria can be conceptually explained by the structure of judo sessions (rituals, rules, paired work, responsibility for a partner's safety), in which virtue manifestations are directly linked to concrete behaviour within specific situations. The indicators consistently demonstrate an association between long-term and regular participation and a higher level of virtue manifestations, reinforcing the assumption of

a cumulative effect of pedagogical influence. The obtained results are consistent with findings in sports pedagogy concerning the importance of sustained and systematic pedagogical influence in the formation of stable behavioural patterns (Garbeloto et al., 2023).

When comparing lesson frequency, it was found that in groups where JPBPA was implemented twice per week, the dynamics of the indicators participation and respect were statistically significantly higher than in the group with one session per week. These results correspond to the conclusions of Carden and Wood (2018) regarding the importance of repetition in the formation of stable behavioural habits. The obtained data confirm that children with two years of judo experience develop more stable behavioural patterns compared to beginners. This is consistent with the principles of social cognitive theory (Bandura, 2014), according to which repeated engagement in structured social situations strengthens internal behavioural regulation. Similar conclusions are found in the works of Nastevičs (2017; 2010) and Kristjánsson (2015), emphasising the importance of regular involvement in repeated interactional situations for the formation of virtue stability. Gülseven et al. (2023) empirically demonstrate that early development of self-control and cooperation in childhood is associated with lower levels of moral disengagement in adolescence. Thus, intergroup dynamics in virtue manifestations were identified depending on the intensity of pedagogical intervention. In the group with higher lesson frequency, indicators of respectful interaction, rule adherence, and participation were higher compared to the group with less frequent sessions. These differences can be interpreted as the result of varying intensity in pedagogically organised physical activity.

The obtained results allow the JPBPA model to be interpreted as a structured sports pedagogical mechanism in which virtue education is implemented through purposefully organised activity. Unlike approaches where the educational effect develops indirectly, in the DFBFA model the experience of virtue is integrated into the structure of the sessions, confirming the scientific novelty of the study: for the first time in Latvia, a JPBPA model for virtue education in preschool has been pedagogically validated and evaluated through a system of indicators.

Overall, the results indicate a consistent trend: the stability of virtue manifestations increases when sessions are regular, structured, and grounded in a consistent pedagogical framework. This allows JPBPA to be interpreted as a pedagogical system in which the impact is determined not by isolated exercises, but by the organisational logic of the sessions. The observed dynamics support the proposed hypothesis that purposefully organised activities based on judo philosophy – centred on rules, cooperation, and the teacher's example – promote the development of children's virtue understanding and behavioural self-regulation.

The findings demonstrate that pedagogically structured physical activity within JPBPA is associated with positive dynamics in virtue manifestations among children aged 5–6 years. Comparisons before and after the intervention in preschool and extracurricular settings revealed statistically significant improvements in socio-emotional self-regulation and cooperation indicators. JPBPA may therefore be regarded as a structured pedagogical mechanism in which clearly defined rules, repetition, cooperation-based activity, and the teacher's example create preconditions for positive behavioural change. The reduction of aggressive manifestations and the increase in cooperation indicators suggest the consolidation of stable behavioural norms in preschool age. A comparative analysis of five groups showed that the dynamics of virtue manifestations differ depending on the educational environment and pedagogical approach. More pronounced results were observed in groups where JPBPA was implemented systematically and purposefully, compared to physical activities without a structured virtue education component.

The developed system of criteria, indicators, and levels ensures an objective and reproducible assessment of virtue manifestations. This system enables the analysis of the impact of the pedagogical intervention and comparison of results between groups, providing a methodologically grounded assessment instrument in accordance with the objectives of *Skola 2030*. The author-developed observation scale represents a significant methodological contribution. It is based on a structured system of criteria and levels that allows the recording of virtue manifestations in real pedagogical situations. The use of observation as the primary method is consistent with pedagogical principles regarding the analysis of children's behaviour in natural cooperative contexts (Pellegrini & Smith, 1998).

At the same time, it should be acknowledged that the dynamics of virtue manifestations may also be influenced by the teacher's personality, the social climate of the group, and children's initial socio-emotional level; therefore, the obtained results should be interpreted as the outcome of the overall pedagogical environment. Additionally, the possibility of a selection effect in extracurricular education groups must be considered: children with longer participation may differ in initial motivation or family support. An observer effect may also be present; thus, future research should incorporate multiple independent evaluators. Other potential influencing factors – such as family involvement and children's initial self-regulation/temperament – should be operationalised and included in further analyses.

The pedagogical intervention in the preschool setting involved a sample of 24 children, which limits the generalisability of the findings. The absence of a control group restricts the ability to establish a strict causal relationship between the pedagogical

intervention and the observed differences. At the same time, the inclusion of pilot study data from VZSS (n = 90) and the application of multiple statistical procedures expanded the comparative analysis and reduced the likelihood of random influence. Previous research on the impact of physical activity on personality development has frequently identified statistical associations between sports participation and indicators such as empathy or self-discipline (Kozdras, 2019; Lindell-Postigo et al., 2023), yet the significance of duration and intensity of intervention has been analysed less frequently. Similar findings regarding improvements in self-control within the context of martial arts were reported by Lakes and Hoyt (2004).

In the present study, a positive association was identified between the duration and regularity of sessions and the level of virtue manifestations. Thus, the mechanism by which virtue manifestations develop is empirically confirmed as being linked to systematic, pedagogically organised physical activity in preschool age. Practically, this indicates that the effectiveness of virtue education is determined not merely by the “type” of activity, but by its pedagogical structure (rules, rituals, repetition, cooperative tasks), which can be systematically reproduced in preschool sports activities.

Overall, the results of the study expand the theoretical understanding within sports pedagogy regarding the possibilities of virtue education in preschool age, demonstrating that judo-philosophy-based physical activities can function as a purposefully organised educational mechanism. Thus, the role of movement-based activities in the child’s personality development is further clarified, emphasising the significance of teacher-organised activity in the internalisation of virtues.

Conclusion

1. The analysis of scientific literature demonstrated that the development of virtue in children aged 5–6 years is one of the most significant pedagogical tasks in the preschool period and is most effectively implemented through activity, including movement-based and play-based forms. Research emphasises the importance of such virtues as friendship, respect, honesty, and participation, as well as their connection with physical activities and social interaction. Judo philosophy, developed by Jigoro Kano, is examined in scientific sources as a value-based and pedagogically grounded approach that promotes the development of virtue in preschool-aged children through structured movement activities. The values and pedagogical principles of judo philosophy conceptually align with the objectives of the *Skola 2030* educational reform, which emphasise the development of socio-emotional skills, cooperation, responsibility, and self-regulation, thereby substantiating the use of JPBPA as a contemporary pedagogical instrument for achieving these objectives in preschool education.
2. Based on the results of the theoretical analysis and the data obtained from the pedagogical pilot study, the JPBPA model concept (judo-philosophy-based physical activities) was developed, oriented toward the purposeful development of virtue in children aged 5–6 years. The model is grounded in judo principles and a natural learning approach through movement and play, structuring content, pedagogical conditions, and forms of organising physical activities, thereby ensuring the systematic integration of virtue into the learning domain Health and Physical Activity.

The developed model creates a pedagogically organised environment in which virtue development occurs through repeated actions, cooperation, and teacher-guided peer interaction. To assess the level of virtue acquisition, 11 criteria and 26 indicators were developed, encompassing various aspects of children's social behaviour. These criteria and indicators were applied in observations, testing procedures, and the analysis of change dynamics throughout all stages of the study.

During the research process, the model's JPBPA objectives, structure, and set of exercises were refined and adapted to the learning domain Health and Physical Activity. The methodology was adjusted to the developmental characteristics of children aged 5–6 years by optimising lesson duration (5–6 minutes) and specifying pedagogical tasks and situational contexts. This increased the precision of assessing change dynamics and ensured the model's practical applicability in preschool education institutions (PEI) and extracurricular education institutions (VZSS).

3. Within the framework of the pedagogical pilot study conducted in an extracurricular education institution (VZSS), involving three groups of children with different levels of judo experience (2 years, 1 year, and beginners), an assessment of the level of virtue manifestations was carried out using qualitative and quantitative research methods. The study employed detailed psychodiagnostic assessment based on adapted methodologies (Kaļiņina, Dermanova, Košeļeva), which ensured a multidimensional evaluation of the level of virtue development and children's behavioural characteristics. The obtained results made it possible to identify differences in the manifestations of virtues – friendship, respect, honesty, and participation – depending on children's experience in judo classes. Data analysis confirmed the children's initial level of virtue development and revealed stable behavioural tendencies characterising their attitudes toward cooperation and social interaction within the group. At the same time, pedagogical situations influencing the development and consolidation of cooperation and empathy skills were identified, thereby substantiating the need to purposefully integrate corresponding tasks into the learning area of Health and Physical Activity in preschool education institutions (PEI). The integration of qualitative and quantitative data provided substantial empirical evidence, forming the basis for refining the structure of the JPBPA model, planning the subsequent pedagogical intervention in PEI, and improving the overall research methodology.
4. The first expert evaluation indicated the pedagogical usefulness and relevance of the JPBPA model as a structured content-based solution for the development of virtue in preschool education. The experts emphasised the model's appropriateness to the developmental characteristics of children aged 5–6 years, its logical structure, and its potential for the purposeful application of JPBPA for virtue development within the Health and Physical Activity learning domain in preschool education institutions (PEI). The expert conclusions substantiated the necessity for further pedagogical validation of the JPBPA model through a pedagogical intervention in PEI.
5. The implementation of the JPBPA pedagogical intervention in a preschool education institution (PEI), based on the experience of two groups at Riga Preschool No. 252 and incorporating 55 adapted pedagogical situations, demonstrated high pedagogical effectiveness within the Health and Physical Activity learning domain. Physical activities grounded in judo philosophy, developed by Jigoro Kano, were implemented with varying intensity (once and twice per week), while maintaining a duration of 5–6 minutes for the main part of the lesson.

The evaluation of virtue manifestation dynamics before and after the intervention revealed statistically and pedagogically significant positive changes in the levels of friendship, respect, honesty, and cooperation among children in the PEI. Comparative analysis between the extracurricular education institution (VZSS) and PEI groups showed that the highest level of virtue manifestations was observed among children in VZSS with two years of judo experience, slightly lower among children with one year of experience, whereas in the PEI setting, virtue development was distinctly positive as a direct result of the purposeful pedagogical intervention.

At the same time, within the PII context, virtue development was more pronounced in the group receiving sessions twice per week compared to the group with one session per week, indicating that the effectiveness of JPBPA depends on the intensity of pedagogical influence. The obtained results enabled refinement of the JPBPA model structure and substantiated the development of practical recommendations for the application of the JPBPA model in preschool and extracurricular education institutions (VZSS), promoting purposeful virtue development among preschool-aged children within the Health and Physical Activity learning domain.

Thus, the results fully confirm the proposed hypothesis and demonstrate the scientific and practical significance of the developed methodology for enhancing the quality of preschool education.

List of publications and reports on the topic of the Thesis

Publications:

1. Krauze, J., Ābele, A., Bula-Biteniece, I., & Rajevska, O. (2026). Assessing the development of virtues in preschool children through physical activity based on judo philosophy: a structured observation. *Ido Movement for Culture – Journal of Martial Arts Anthropology*, 26(2 (2026)), 32–39. https://science.rsu.lv/admin/files/121569599/Assessing_the_development_of_virtues_in_preschool_children_through_physical_activity_based_on_judo_philosophy_a_structured_observation.pdf
2. Krauze, J., Ābele, A., Bula-Biteniece, I., Rajevska, O. (2025). Comprehensive Analysis of the Perception of Virtues in 5–6-Year-Old Preschoolers with Different Judo Experience Based on an Authorial Scale. *Physical Education Theory and Methodology*, 25(5), 1146–1152. <https://doi.org/10.17309/tmfv.2025.5.14>
3. Krauze, J., Ābele, A., Bula-Biteniece, I. (2025). Interrelations between the Morals of 5–6-Year-Old Children and Balance Exercises in Judo Physical Activities. *Lase Journal of Sport Science*. DOI: https://doi.org/10.25143/lase_joss.v15i1-2.04
4. Krauze, J., Bula-Biteniece, I., Ābele, A. (2024). Actualization of Jigoro Kano's judo philosophy for virtue education in preschool children. “The 18th International Scientific Conference “Society. Integration. Education – SIE2024”. May 24–25 2024. <https://journals.rta.lv/index.php/SIE/article/view/7825/6558>
5. Krauze, J. (January 2022). Historical analysis of the evolution of ideas of morality education with the european and japanese society. *Scientific collection “Interconf”*. 95, 191–197. <http://dx.doi.org/10.51582/interconf.19-20.01.2022.018>
6. Krauze, J. (2020). Game influence in judo lessons on moral education for preschool age children. *European Journal of Humanities and Social Sciences*, (5), 85–91. https://ppublishing.org/media/uploads/journals/journal/EJH-5_2020_TL.pdf
7. Krauze, J. (2021). Educational situations in judo lessons as a means of moral education of preschoolers. *InterConf*. <https://ojs.ukrlogos.in.ua/index.php/interconf/article/view/13547>

Reports and abstracts at international and local scientific conferences:

1. Integrated Learning of Fundamental Movements and Values through Judo-Philosophy-Based Physical Activities. Rīga Stradiņš University International Research Conference on Medical and Health Care Sciences “Knowledge for Use in Practice” 2025-05-26
2. The Impact of Judo Activities on the Development of Values in Preschool Children. XV international scientific and practical conference “Modern problems and Prospects for the Development of Physical Education, Health and Professional Training of Future Specialists in Physical Culture and Sports”, 2025-05-27, Kiiv, Ukraine.
3. Actualization of Jigoro Kano's judo philosophy for virtue education in preschool children. The 18th International Scientific Conference. Society. Integration. Education – SIE2024. May 24-25, 2024, Rēzekne, Latvia
4. Pupil personality building during judo classes. The 12th conference of Baltic Society of Sport Sciences. 25–26 April 2019, Vilnius, Lithuania
5. The impact of judo philosophy on the personal and social development of 5–6-year old children. Rīgas Tehniskās universitātes 66. Starptautiskās zinātniskās konferences. 2025. gada 17. oktobrī, Rīga, Latvija
6. Džudo treniņu līdzekļu ietekme uz 5–6 gadus vecu bērnu tikumiskās audzināšanas attīstību. LSPA starptautiskā doktorantu un maģistrantu 13. Zinātniskā konference sporta zinātnē SPORTAM BŪT! 2020. gada 21. decembrī, Rīga, Latvija

7. Džudo treniņu līdzekļu ietekme uz 5–6 gadus vecu pirmsskolēnu tikumiskās audzināšanas attīstību. LSPA starptautiskā doktorantu un maģistrantu 12. Zinātniskā konference sporta zinātnē “sports 2020: dzīve ir kustība, kustība ir sports“. 2020. gada 16. martā, Rīga, Latvija
8. Bērna personības veidošanās džudo cīņas aspektu ietekmē. LSPA starptautiskā doktorantu un maģistrantu 11. Zinātniskā konference sporta zinātnē „Sports 2019: darām šodien, domājot par rītdienu“. 2019. gada 18. martā, Rīga, Latvija

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