

A – Research concept and design
 B – Collection and/or assembly of data
 C – Data analysis and interpretation
 D – Writing the article
 E – Critical revision of the article
 F – Final approval of article

Received: 2023-10-04
 Accepted: 2023-12-18
 Published: 2023-12-27

Psychological resilience and parents' engagement in paediatric physiotherapy

Anna Karolina Kloze^{*A-F} , Aleksandra Buchholz^{A-F} 

Faculty of Rehabilitation, Jozef Pilsudski University of Physical Education in Warsaw, Poland

***Corresponding author:** Anna Karolina Kloze, Faculty of Rehabilitation, Józef Piłsudski University of Physical Education in Warsaw; email: anna.kloze@awf.edu.pl

Abstract

Introduction: Parental involvement in pediatric physiotherapy is a fundamental component of the family-centered paradigm and falls within the contemporary interdisciplinary model of early intervention. The active participation of parents in the therapy process augments its efficacy. The personal trait of resilience significantly increases the likelihood of parental involvement. This study aims to examine the correlation between resilience and the extent of carer involvement in a child's physiotherapy.

Material and methods: We conducted a survey involving 41 carers of children with developmental disabilities who were undergoing the physiotherapy process. Diagnostic survey methods were employed to gather data, utilizing the following instruments: Resilience Scale 25, the Author's Survey Questionnaire for Child Carers, and the Author's Survey Questionnaire for Physiotherapists.

Results: The findings indicated a relationship between resilience and the level of involvement in the child's physiotherapy process. Resilience-enhancing factors such as openness to experience, a sense of humour, proactive coping strategies, and perseverance were identified as significant contributors.

Conclusions: Resilience can play a pivotal role in determining the degree of carer involvement in a child's physiotherapy. Parents should actively participate in the therapeutic process. Workshops to cultivate resilience should be included in the support offer, as they can enhance the prospects of therapeutic success. Trust-based, empathetic communication with the physiotherapist is vital during the rehabilitation process, fostering parental competence and instilling a sense of parental empowerment.

Keywords: carers, children with disabilities, rehabilitation

Introduction

The birth of a child with a disability constitutes a pivotal event in a family's life, and often surpasses the parents' adaptive capacities. It exposes them to negative emotions that, if not effectively managed, can lead

to parental burnout, thereby impeding the child's therapeutic progress [1–3]. The initial phase of parental adjustment to disability, i.e. the shock stage, demands the greatest support, due to the dynamics of changes in intensity and direction of emotions [4,5]. This is the period when the child's rehabilitation begins. At this



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stage, parents have many fears and anxieties about the child and physiotherapy, and also about the way to respond and develop effective communication in the physiotherapist-parent relationship, a greater understanding of the child's condition and establishing a consistent narrative as to the direction of therapeutic interventions [6]. The relationship with the physiotherapist emerges as one of the foremost sources of formal support for parents. Resilience appears to play a major role in the group of personal attributes that facilitate adaptation to disability and active engagement in therapy [7,8].

The American Psychological Association [9] defines resilience as a process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress. Resilient individuals perceive stressful events as challenges. Being aware of their own resources fosters their confidence in achieving a positive outcome [10–12]. Resilience is linked to enhanced psychophysical well-being and contributes to effective stress management within the family unit [8].

Contemporary models for providing pediatric physiotherapy services are grounded in a family-centered approach, which is considered an integral aspect of therapy. This approach necessitates active parental involvement in the rehabilitation process [13,14]. Recent analyses of this subject reveal that parental presence, participation and involvement are fundamental components of children's rehabilitation [15,16]. King et al. [17] characterize involvement as a state marked by affective, cognitive and behavioral engagement. The affective dimension pertains to an optimistic attitude, receptivity to therapy, and trust in the therapist. The cognitive dimension encompasses the belief system regarding the necessity and effectiveness of the intervention offered. The behavioral dimension manifests in the parents' level of activity in co-authoring the therapy plan and participating in therapy sessions. Research demonstrates that the involvement of parents in therapy fosters the development of parental competence through cooperation in following rehabilitation recommendations, which maintain therapy continuity [18–20].

Parental involvement in therapy contributes to its effects. Active presence in therapy facilitates understanding of the child's development and builds an emotional bond with the child [13,21]. A systemic perspective of the parent-child relationship points to the health-promoting consequences of parental attitudes that are naturally impact on children. From an early age, the child of a parent who is actively involved will develop proactive attitudes that are conducive to health [20–23]. Research shows a correlation between parents' level of resilience and their involvement in their child's rehabilitation, improving the therapy process and supporting parental empowerment [24,25].

In accordance with the Theory of Parent Attendance, Participation and Engagement (PAPE) proposed by Phoenix et al. [15], the process of parental involvement in physiotherapy comprises six elements: logistics (strategies for organizing the day), knowledge (level of cognitive engagement in physiotherapy activities), skills (optimizing specialist support), emotions (ability to share them with the physiotherapist), the relationship with the therapist (level of trust in the physiotherapist), and values and beliefs (confidence in the therapy's effectiveness). This study adopts the perspective of resilience as a personal trait, representing a universal self-regulatory mechanism that shields against the repercussions of adverse life experiences, including trauma and daily hassles. It promotes perseverance and flexible adaptation to life's demands, encourages proactive responses in adverse circumstances, and heightens tolerance for negative emotions and setbacks [26]. We hypothesize that high levels of resilience may augment engagement in a child's physiotherapy. Based on this hypothesis, the aim of the research was to determine the level of resilience in caregivers of children undergoing early pediatric physiotherapy and its impact on involvement in therapy.

To date, research in pediatric physiotherapy has paid limited attention to analyzing the level of carer involvement in the therapy process. Few tools exclusively focus on the behavioral dimensions of involvement [26]. The research presented in this study aligns with the biopsychosocial approach to disability, which underscores the multifactorial nature (i.e. psycho-physical conditions and the environment). In the context of the child, the family constitutes the environment, and its involvement plays a crucial role in determining the success of rehabilitation [28]. Multifactoriality pertains to the behavioral, cognitive, and affective aspects considered in the analysis of carers' involvement in the child's therapy [15]. According to the International Classification of Functioning, Disability and Health Children and Youth Version, the participation construct comprises two components: attendance (behavioral aspect) and involvement (cognitive and emotional aspects) [29–30]. The studies described in this research, based on the PAPE concept [15], comprehensively consider all these aspects.

Materials and methods

Forty-one participants aged between 26 and 58 years ($M = 38.44$; $SD = 6.05$), who were caregivers of children aged between one and three years ($M = 38.44$; $SD = 6.05$) receiving services from the Early Intervention Centre (further EIC), took part in this study. The EIC is a rehabilitation and therapeutic facility for

children with developmental challenges between the ages of 0 and 7 years, and is located in Mazovia Province, Poland. Among the participants were 28 women, aged between 27 and 58 years ($M = 38.79$; $SD = 5.94$), and 13 men, aged between 26 and 47 years ($M = 37.69$; $SD = 6.47$). Table 1 presents the characteristics of the study group, who were selected using a non-probabilistic method based on specific characteristics. This means that it should not be generalised to the local population.

The Resilience Scale 25 assesses resilience. The scale uses a Likert scale to measure the overall resilience score, which is obtained by summing the responses and scores of individual subscales. The subscales require respondents to indicate their degree of agreement with specific statements, where 0 corresponds to „definitely not” and 5 corresponds to „definitely yes”. Higher scores indicate a higher level of resilience. The overall reliability score, as measured by Cronbach’s alpha, was satisfactory at 0.89. The tool comprises five subscales: perseverance and self-determination ($\alpha = 0.72$), openness to experience and sense of humor ($\alpha = 0.68$), personal coping competence and tolerance of negative emotions ($\alpha = 0.74$), tolerance of failure and treating life as a challenge, optimistic attitude, and the ability to act in difficult situations ($\alpha = 0.75$) [26].

The Author’s Questionnaire for the Carer of a child participating in physiotherapy is used for the subjective assessment of the carer’s level of involvement in the child’s rehabilitation based on individual items from the Phoenix model [31]. It consists of 25 statements and

employs a four-point Likert scale with 0 corresponding to „definitely not” and 4 to „definitely yes.”

The design of the Author’s Survey Questionnaire for the Physiotherapist is analogous to the Carer’s Questionnaire and consists of 19 statements for the respondents to address. This questionnaire is used to assess the level of parental involvement in their child’s physiotherapy from the perspective of the physiotherapist. To ensure that the survey tools would be effective and provide appropriate results, and that their content would be understandable, a pilot study was conducted on a group of 15 people. To develop the tool, elements of the method of competent judges were used, who assessed the compliance of individual statements with the definition of individual dimensions of the PAPE concept [32].

The study was conducted at the EIC between 01.12.2022 and 31.03.2023. The authors distributed the questionnaires to carers and physiotherapists, emphasizing that participation in the study was voluntary and that the data would be fully anonymized. The study adhered to research ethics principles [33]. Inclusion criteria for the study required having a child under rehabilitation care at the EIC and regular (i.e. at least weekly) participation in physiotherapy for a minimum of 6 months. 50 questionnaires were distributed, with 9 being excluded from the statistical analysis due to missing data.

Statistical analysis

Statistical analysis of the data was performed using IBM SPSS Statistics v. 2 Firstly, the authors calculated

Tab. 1. Characteristics of study participants

Variables	Quantitative parameters N (%)		
Domicile	City (>100k inhabitants) N = 33 (80.5%)	City (<100k inhabitants) N = 8 (19.5%)	
Child’s age	Up to 1 year of age N = 12 (29.3%)	1–3 years of age N = 16 (39%)	Over 3 years of age N = 13 (31.7%)
Education	Master’s degree N = 30 (73.2%)	Other N = 11 (26.8%)	
Income	Higher than the minimum N = 24 (58.5%)	Minimum (3490 PLN) N = 12 (29.3%)	Lower than the minimum N = 5 (12.2%)
Professional activity	Full/part time N = 18 (43.9%)	Unemployed N = 5 (12.2%)	Parental leave N = 18 (43.9%)
Marital status	Married N = 33 (80.5%)	Single N = 8 (19.5%)	
Caring situation	Both carers N = 37 (43.9%)	Single carer N = 4 (9.8%)	

N – individuals, % – sample percentage.

descriptive statistics for all interval variables analyzed, i.e. mean values, standard deviations, minimum and maximum values, and the results of the Shapiro-Wilk test used to verify the assumption of a normal distribution of the variables. Moreover, the authors verified the reliability of the measurement with Cronbach's alpha reliability coefficients. The variables which deviated significantly from the normal distribution were further analyzed with Spearman's rho correlation coefficient. The other variables were analyzed with Pearson's r correlation coefficient. The conventional p-value of 0.05 or lower was adopted as a threshold for detecting statistically significant correlations. Non-parametric tests of statistical significance were applied to analyze the scores obtained on these scales.

Results

Table 2 displays descriptive statistics for the interval variables that were analyzed, i.e. mean values, standard deviations, minimum and maximum values, and the results of the Shapiro-Wilk test used to verify the assumption of a normal distribution of these variables.

Tab. 2. Descriptive statistics for the variables analyzed

Variables	M	SD	min	max	S-W	p	α
Perseverance and Determination	15.34	2.96	8	20	0.96	0.169	0.75
Openness to Experience and Sense of Humor	15.56	3.09	8	20	0.94	0.027	0.77
Personal Coping Competence and Tolerance of Negative Emotions	14.32	3.21	8	20	0.95	0.084	0.75
Tolerance for Failure and Treating Life as a Challenge	14.68	2.94	9	20	0.96	0.168	0.69
Optimistic Attitude to Life and the Ability to Mobilize in Difficult Situations	12.80	3.76	5	20	0.95	0.089	0.79
Resilience	72.71	13.90	42	100	0.98	0.829	0.93
Logistics/c	11.41	2.61	7	16	0.94	0.045	0.61
Values/c	13.88	2.09	8	16	0.87	0.001	0.75
Knowledge/c	11.10	1.30	8	12	0.71	0.001	0.80
Skills/c	18.07	3.39	10	24	0.95	0.066	0.77
Feelings/c	11.85	2.67	4	16	0.95	0.055	0.73
Relationships/c	11.76	2.67	6	16	0.96	0.200	0.74
Logistics/ph	10.05	1.67	6	12	0.89	0.001	0.49
Values/ph	9.66	1.94	4	12	0.91	0.003	0.71
Knowledge/ph	12.24	2.79	5	16	0.94	0.034	0.71
Skills/ph	8.32	2.39	2	12	0.93	0.018	0.69
Feelings/ph	6.88	2.63	0	11	0.94	0.046	0.68
Relationships/ph	6.34	2.47	2	11	0.96	0.106	0.79

α – Cronbach's Reliability Coefficient, c – Carer's Assessment, M – mean value, max – maximum value, min – minimum value, p – statistical significance, ph – physiotherapist assessment, SD – standard deviation, S-W – Shapiro-Wilk test value.

The summary is supplemented with the values of Cronbach's α reliability coefficients.

Statistically significant deviations from the normal distribution were observed for scores on the scales of openness to experience and humour ($p = 0.027$), for scores on the logistics ($p = 0.045$), values ($p = 0.001$), and knowledge ($p = 0.001$) scales of the carer questionnaire, and scores on the logistics ($p = 0.001$), values ($p = 0.003$), knowledge ($p = 0.034$), skills ($p = 0.018$), and feelings ($p = 0.046$) scales of the physiotherapist questionnaire. The overall results indicated a slightly higher level of resilience among caregivers (72.71) compared to the average score (69.45) [26].

Table 3 presents the correlation coefficients between the resilience indices and the scores on the scales of the carer questionnaire. Scores on the scales of openness to experience and humor, logistics, values, and knowledge exhibited statistically significant deviations from the normal distribution. The remaining variables were analyzed using Pearson's r correlation coefficient. Statistically significant correlations were indicated.

Statistically significant positive correlations were observed between openness to experience and a sense of humour and scores on all scales of the carer

Tab. 3. Correlation coefficients between resilience indices and scores on the scales of the carer questionnaire

Resilience	Carer					
	Logistics	Values	Knowledge	Skills	Feelings	Relationships
Perseverance and Determination	0.250	0.162	0.362*	0.210	0.255	0.281
Openness to Experience and Sense of Humor	0.606**	0.410**	0.486**	0.440**	0.556**	0.548**
Personal Coping Competence and Tolerance of Negative Emotions	0.292	0.009	0.176	0.137	0.115	0.151
Tolerance for Failure and Treating Life as a Challenge	0.498**	0.167	0.356*	0.170	0.194	0.307
Optimistic Attitude to Life and the Ability to Mobilize in Difficult Situations	0.253	0.220	0.297	0.274	0.259	0.291
Total	0.172	0.345*	0.449**	0.184	0.339*	0.341*

* $-p < 0.05$, ** $-p < 0.01$.

Tab. 4. Correlation coefficients between resilience indices and scores on the physiotherapist questionnaire scales

Resilience	Physiotherapist					
	Logistics	Values	Knowledge	Skills	Feelings	Relationships
Perseverance and Determination	0.347*	0.231	0.390*	0.240	0.364*	0.335*
Openness to Experience and Sense of Humor	0.356*	0.251	0.458**	0.213	0.452**	0.406**
Personal Coping Competence and Tolerance of Negative Emotions	0.295	0.264	0.449**	0.180	0.427**	0.376*
Tolerance for Failure and Treating Life as a Challenge	0.071	0.041	0.206	-0.086	0.166	0.107
Optimistic Attitude to Life and the Ability to Mobilize in Difficult Situations	0.104	0.144	0.244	0.059	0.180	0.146
Total	-0.126	0.070	0.084	-0.026	0.024	0.004

* $-p < 0.05$, ** $-p < 0.01$.

questionnaire. Perseverance and self-determination exhibited a positive correlation with scores on the knowledge scale. Tolerance for failure and treating life as a challenge displayed a positive correlation with scores on the logistics and knowledge scales. The overall level of resilience demonstrated a positive correlation with scores on the values, knowledge, feelings, and relationships scales.

Table 4 presents the correlation coefficients between resilience indices and scores on the scales of the physiotherapist questionnaire. Scores on the scales of openness to experience and humor, logistics, values, knowledge, skills, and feelings exhibited statistically significant deviations from the normal distribution. The remaining variables were examined using Pearson’s r correlation coefficient. Statistically significant correlations were indicated.

Statistically significant positive correlations were observed between perseverance and self-determination, as well as openness to experience and a sense of humor, and scores on the scales of logistics, knowledge, feelings, and relationships. Personal coping competence and tolerance of negative emotions correlated positively with scores on the scales of knowledge, feelings, and relationships.

Discussion

Correlation analysis of individual items from the Resilience Scale 25 and the Author’s questionnaires indicated that openness to experience and a sense of humor correlated positively with all the items from the Carer Questionnaire and most of the items in the Physiotherapist Questionnaire. Existing research emphasizes

openness to experience as a resilience factor that facilitates engagement in therapy. This is achieved through readiness to learn, and flexibility in dealing with the challenges at behavioral, emotional, and cognitive levels that a child's participation in rehabilitation may present [38,39]. Openness to experience is linked to the task-oriented strategy that parents adopt to achieve their goal of increasing the effectiveness of physiotherapy through involvement. A study by Pyszkowska and Wrona [40] found that resilience and emotional engagement, combined with a task-based approach to the caregiving challenges of a child with a disability, optimize the quality of life for families. Dharshini and Punithavathi [41] demonstrated the impact of a task-based strategy on reducing stress in parents of children with disabilities, which, in turn, may facilitate deeper engagement in therapy. Humor appears to be one of the more adaptive defense mechanisms and coping strategies when faced with a child's disability, as highlighted by research by Fritz [42]. Moreover, Miranda et al. [43] indicated a correlation between task-based approaches and parental involvement in caring activities for a child with disabilities. According to the authors, the use of adaptive humour helps carers gain support and reformulate stressors, which contributes to psychophysical resilience to stress and more effective engagement in the child's therapy [42].

Correlation analysis of the level of resilience and the Carer Questionnaire revealed a positive correlation of tolerance for failure and treating life as a challenge (subscales from Resilience Scale 25) with the behavioral and cognitive aspects related to engagement in therapy. Resilience, as a trait which generates positive emotions and proactive attitudes, is one of the more adaptive coping mechanisms for stress [44,45]. It fosters a commitment to gaining knowledge about the child's disability and opportunities to support the child's development, contributing to lower parental stress [16,43].

These results may suggest the importance of resilience for the described dimensions of commitment. This emphasizes the compatibility of the perspectives of the caregiver and the physiotherapist. Caregivers with a higher level of resilience are perceived by physiotherapists as involved in the therapy. Correlation analysis of resilience levels and the Physiotherapist Questionnaire confirmed that perseverance and self-determination were linked to most of the items from the Physiotherapist Questionnaire. Resilience researchers have identified perseverance in achieving one's goals as the primary characteristic shared among resilient individuals who strive to accomplish their intentions despite unfavorable circumstances [12,45–47]. Resilient parents aspire to enhance their parental competences through active involvement in their child's therapy. Research reveals

parents' needs to participate in the therapeutic process to learn more about effective developmental stimulation and to support basic human needs such as autonomy or self-determination [48,49]. The carer's personal competence to cope and tolerance of negative emotions (a subscale from Resilience Scale 25) were found to correlate with the cognitive (knowledge) and affective (relationships and feelings) aspects.

Resilience researchers have identified positive emotionality, sociability, empathy, and extraversion as conducive to both building emotional bonds (even in times of crisis) and being open to accepting help [50–52]. Research findings confirm that contact with the physiotherapist, based on trust, empathy, mutual understanding of needs, and effective communication, is one of the key elements of parental involvement in rehabilitation [27,53], while studies on parental resilience indicate its impact on effective communication [8,54].

Smith and Samuels [16] conducted a review of research on the parental roles played by carers of a child in therapy. The authors presented a variety of parental roles on a continuum ranging from the passive "Bringer" to the active "Collaborative decision-maker." The latter is the most desirable role, reflecting a partner's contribution to the therapy process and is the result of a positive relationship with the therapist.

The research has its limitations, including the small study group of 41 participants. Due to the location of the facility where the research was conducted, most of the participants came from a city with a population of more than 100,000, which is reflected in the limited variation in the respondents' socioeconomic status and similar opportunities for accessing rehabilitation services. Future research should take into account territorial (small towns and villages) and socioeconomic (people with lower earnings and different education) diversity, which could prove to be a modifying variable in the results obtained. Another limitation is the Author's Questionnaire, which requires psychometric analysis to be widely used. Further research should include an analysis of the perspectives of the caregiver and the physiotherapist. The results may help determine to what extent the parent's perspective is consistent with the assessment of the level of involvement of the physiotherapist which may have consequences for the way of communicating and understanding the therapy situation and related tasks.

The research findings emphasize the need to include psychological support for parents in the child's rehabilitation process. The physiotherapist's open approach, respecting the ongoing experiences of the parent, will enable mutually collaborative engagement. A sense of acceptance on the part of the professional will create space for a genuine exchange of ideas and

contribute to a fuller understanding of both the child's condition and the interventions. This should all take place in an atmosphere of optimism and hope for therapeutic success. Specialists should involve parents in the process of the child's therapeutic care and ensure the parents' emotional and psychological comfort by giving them a chance to build a trust-based partnership with the physiotherapist. Therefore, it seems important to enrich, in an interdisciplinary spirit, the competence of the physiotherapist with the skills of effective communication with the patient in courses and training. Additionally, basic knowledge in the area of working with a person in crisis may be useful. With regard to parents, the implementation of activities that support the development of psychological resilience, such as workshops aimed at developing the trait of resilience, can significantly contribute to improving the quality of the aforementioned relationship. One of the practical solutions, and a proposal for workshops and training, would be to surround the parent-physiotherapist relationship with psychological care or to enable physiotherapists to benefit from supervision. This type of solution is more possible in private institutions. Public facilities in Poland remain poorly financed, which requires systemic changes.

Conclusions

The study demonstrated the presence of a relationship between the parent's level of psychological resilience and their involvement in the child's physiotherapy. Positive communication based on empathic understanding makes the therapy more likely to succeed, empowering parents. Inclusion of psychological resilience workshops for carers in the offerings of rehabilitation facilities can foster positive engagement in the child's physiotherapy.

Funding

This research received no external funding.

Conflicts of interest

The authors declare no conflict of interest.

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