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There is no madness in spinal manual techniques in the pediatric setting

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There is no madness in spinal manual techniques in the pediatric setting

We are writing this letter in response to your editorial article *Olson KA, Clewley D, Milne, N et al. (2024): Spinal manipulation and mobilisation for pediatric conditions: time to stop the madness; JMMT Vol. 32 Nr.3, 207–210*

Manual Medicine in children has been well established for decades in modern medicine. It is always necesssary to engage in professional debate on the base of profound scientific findings. Polemics based on inadequate research will get us nowhere. Defamatory word games damage the debate and discredit your own scientific and professional reputation.

The international taskforce [1] who drew up the blatantly unscientific conclusion referring to 'madness' when it comes to spinal manipulation/mobilization in children fails to take into account the work of many other international Manual Medicine expert groups who share at least the similar expertise in the treatment of infants and babies:

- In 2013, a German taskforce [2] including professionals from different leading Manual Medicine schools gave recommendations for diagnostics and treatment in children affected.
- As expert clinicians working with Manual Medicine techniques on babies and children we know via our daily hands-on work and recent valid research [3]: spinal mobilisation/manipulation is safe, not harmful and can be a more than necessary tool to treat infants in the very best way in order to help them with different conditions (e.g. dysfunctions at the cervicooccipital junction).
- The Dutch Manual expert colleagues [4] make accessible for everyone their total number of treated babies on an annual basis for decades – simultaneously showing the nonexistence of severe adverse effects (10).
- Recently, a German Manual Medicine expert task force with decades of clinical experience in the Manual Medical therapy published a Level II-a and a Level I-b study on Manual Medicine techniques of the baby cervical spine in 2021/2022, which demonstrated the effectiveness of manipulation [5, 6]

Unfortunately, this evidence is not cited in the publications of your task force – you did not provide complete scientific literature research. The task force's authors' ignorance versus the carefully constructed multicentre study of Sacher et al. speaks a language full of bias. It is also necessary and relevant to take into account valid 'old' data and publications in order to achieve a complete picture before drawing conclusions to shut valid techniques down as 'mad' (e.g [7–9].

Your argumentation that the spinal treatment of dysfunction might delay further diagnostic necessities in babies with possible underlying other medical conditions can only be understood by taking into account that you are writing from a physiotherapist's point – i.e. not a physician's point of view. As trained physicians, this is always the first and most relevant fact: primum non nocere – it is needless to say how profoundly babies are examined prior to working on them.

We need to stress that not treating these babies with spinal techniques would mean that we actively derive these patients from a treatment that has proven its effectiveness in the hands of the experienced [3,10].

The true fact that there exists a paucity of large clinically well-designed studies does in no way justify the conclusion that the spinal techniques successfully implemented over the last 50+ years by experts exclusively (or predominantly) treating babies and children do no longer have a right to exist.

Spinal techniques in the infant patient population have absolutely nothing to do with madness. Their use must not be stopped.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Supplement to the four-item symmetry score for investigation of postural and movement asymmetries in infants: responsiveness, sensitivity, specificity

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Abstract

Background and objective: The aim of the study is to analyze the psychometric data of the four-item symmetry score with regard to responsiveness, sensitivity, and specificity according to the COSMIN recommendations.

Materials and methods: The examination protocols of 38 infants from a previously published pilot study were re-evaluated and the examiners' assessments were compared with the results of the four-item symmetry score. The McNemar test was used to calculate the responsiveness. The data from the validity study were used to determine specificity and sensitivity.

Results: The four-item symmetry score can be considered robust, with a significance of 0.248 in the McNemar test, a sensitivity of 83%, and a specificity of 85%.

Conclusion: The four-item symmetry score fulfills the criteria of the COSMIN recommendations and is suitable for the identification and follow-up of infants with postural and movement asymmetries at the age of 14–24 weeks.

Keywords
Child development · Musculoskeletal system · Quality criteria · Evaluation · Test quality

Background and objective

The consensus-based standards for the selection of health-related measurement instruments (COSMIN [4]) published in 2010 contain recommendations on the psychometric properties of the following quality criteria domains: validity, reliability, and responsiveness. The development and promotion of transparent standard methods and practical instruments should facilitate the selection of suitable instruments for measuring outcomes in research and clinical practice (COSMIN checklist [5]).

One example of the ongoing review of psychometric properties of standardized examination protocols is the current analysis of the infant motor profile [3].

A video-based measurement system and the four-item symmetry score based on it were developed to monitor infants with postural and movement asymmetries [9]. This score allows the largely objective identification and tracking of postural and movement abnormalities in infants in the second trimester. It was designed for use in clinical studies and published in 2018. This score has already been confirmed as valid and reliable. It serves as a quantifiable symmetry score for diagnosis, evaluation, and follow-up of infants aged 3–6 months with infantile postural and movement asymmetries. The four items

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Table 1 Responsiveness: agreement			
n = 38	*Agreement before intervention (pre)*	*Agreement 4–6 weeks after intervention (post)*	*Significance (McNemar-test)*
Medical evaluation & four-item symmetry score	38	35	*p* = 0.248
	= 100%	= 92.1%	

Table 2 Sensitivity and specificity		
n = 26	*Medical evaluation in need of treatment*	*Medical evaluation—not in need of treatment*
Four-item symmetry score in need of treatment	5	3
Four-item symmetry score not in need of treatment	1	17
	Rate of infants affected (sensitivity) = 83%	Rate of healthy infants (specificity) = 85%

tested are the modified frontal righting reflex reaction, the active head rotation in supine position, the head uplifting in prone position, and the muscular tonus symmetry of the hip rotation.

The aim of this work is to supplement the not yet published responsiveness regarding the detectability of the score with regard to the therapeutic effect of the four-item symmetry score developed by us on the basis of the COSMIN recommendations [5].

Materials and methods

The study to investigate the quality criteria and the pilot study were approved by the Ethics Committee of the University Hospital of Jena (4270-11/14; confirmed on 06.01.2015). While the results on the validity and reliability of the four-item symmetry score were published and discussed in 2018 [9], information on responsiveness is now added.

To this end, the data from the pilot study [9] were analyzed again. In the pilot study, the investigators of all 38 infants included were asked about the need for treatment of the respective child at the second measurement timepoint. This follow-up examination took place 4–6 weeks after the initial examination and single treatment. The answers were recorded in the examination protocol and evaluated at the Institute for Physiotherapy at Jena University Hospital.

Responsiveness was calculated using the agreement rate at both measurement timepoints. Significance at the 5% level was calculated using the McNemar test within a cross tabulation [7]. The decisive factor for this was the agreement between the need for treatment of all children included and the result of the four-item symmetry score (≥ 10 points) and the medical expertise (assessment of the need for treatment).

In addition, the specificity and sensitivity of the four-item score were to be calculated. The data from the validity study can be used as the basis for the calculation. For this purpose, the score was divided into the results requiring treatment or not requiring treatment using a cut-off value. Sensitivity refers to the true-positive rate, so that affected children are also assessed accordingly by the score. Specificity, on the other hand, refers to the true-negative rate, so that healthy individuals can be clearly assigned both by the medical staff and by calculation of the score [6].

Results

The data of the 38 infants involved in the pilot study (March–July 2015) with an age of 14–24 weeks (mean 17 weeks) were analyzed. Of these, 26 were male and 12 were female.

The inclusion criterion for the pilot study was a four-item symmetry score of more than 9 points. The examiner's clinical assessment was also queried for confirmation. As a result, the agreement before the intervention was exactly 100%, i.e., there were 38 agreements. At the second measurement timepoint, the agreement rate was slightly lower, at 92.1%; 34 times the agreement corresponded to an improvement up to symmetry and only once did not fall below the threshold of needing treatment. However, this was determined both by the examiners and by the calculation using the four-item symmetry score (◘ **Table 1**). Three children were still assessed by the control examiner as needing treatment, although the symmetry score was below 10 points.

The sensitivity and specificity can be calculated from the previously published validity data (◘ **Table 2**). The sample for the validity test was 26 infants aged 20–28 weeks (mean 20 weeks), exactly half of whom were female.

Discussion

The development of suitable test procedures for infants with postural and movement asymmetries is a particular challenge. As there are no standardized examination items for motor development (gold standard), it was necessary to design an examination score for the assessment of postural and movement asymmetry. Special features in infancy are the limited compliance and short attention spans of the patients, reservations of the parents regarding multiple examinations of the children, and much more.

In order to nevertheless meet the COSMIN recommendations, the analysis of responsiveness was carried out on the basis of collected and previously unpublished data from a pilot study.

The results show that the four-item symmetry score is suitable for assessing postural and movement asymmetries in infants in terms of validity, reliability, and responsiveness to change following an intervention. The score was specially designed for use in clinical studies. It was first used in two randomized controlled trials (RCT) [10, 11] to investigate the therapeutic effects of a single manual medical treatment of infants aged 14–24 weeks with functional postural and movement asymmetries. The results of both studies are therefore reliable, valid, and robust. According to the European core curriculum of the European Scientific Society of Manual Medicine (ESSOMM), an association of 17 European pro-

fessional societies from 11 countries, the multicenter RCT [11] was rated "as an example of good-quality studies (level Ib)" [2].

In view of the four simple clinical tests—which are not time consuming, are hardly stressful for the children, and are available everywhere—the score characteristics are suitable for identifying and following up children in need of treatment due to their specificity and sensitivity of over 80%. One limitation of the study results presented is the number of infants included.

Other standardized video-based examination procedures for infants aim at early identification of children with neurodevelopmental abnormalities [1, 3] and, hence, serve other questions. The items of an asymmetry score used by Philippi et al. for assessment and progress monitoring [8] of infantile postural and movement asymmetries were not sufficiently reproducible in our preliminary reliability study [9].

The four-item symmetry score presented by us is a video-based assessment that is designed in accordance with the COSMIN recommendations and is suitable for identifying and tracking infants with postural and movement asymmetries aged 14–24 weeks.

Conclusion

The four-item symmetry score can be used to screen and track postural and movement disorders in infants. It is designed for clinical studies and fulfills the criteria of the COSMIN checklist in terms of reliability, validity, and responsiveness in order to detect the effects of early intervention.

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Data Availability Statement. The data that support the findings of this study are available from the corresponding author upon reasonable request.

Zusammenfassung

Ergänzung des 4-Item-Symmetriescores zur Untersuchung von Haltungs- und Bewegungsasymmetrien bei Säuglingen: Responsivität, Sensitivität, Spezifität

Hintergrund und Ziel: Ziel der Arbeit ist die Analyse der psychometrischen Daten eines 4-Item-Symmetriescores bezüglich Responsivität, Sensitivität und Spezifität entsprechend den COSMIN-Empfehlungen („consensus-based standards for the selection of health-related measurement instruments").
Material und Methoden: Es wurden die Untersuchungsprotokolle von 38 Säuglingen einer bereits veröffentlichten Pilotstudie erneut ausgewertet und die Einschätzungen der Untersucher mit den Ergebnissen des 4-Item-Symmetriescores verglichen. Die Berechnung der Responsivität erfolgte mithilfe des McNemar-Tests. Zur Bestimmung der Spezifität und Sensitivität wurde auf die Daten der Validitätsuntersuchung zurückgegriffen.
Ergebnisse: Der 4-Item-Symmetriescore kann als robust eingeschätzt werden, es ergibt sich eine Signifikanz von 0,248 im McNemar-Test, die Sensitivität beträgt 83 %, die Spezifität 85 %.
Schlussfolgerung: Der 4-Item-Symmetriescore erfüllt die Kriterien der COSMIN-Empfehlungen und eignet sich für die Identifikation und Nachverfolgung von Säuglingen mit Haltungs- und Bewegungsasymmetrien im Alter von 14–24 Wochen.

Schlüsselwörter
Kindesentwicklung · Muskuloskelettales System · Gütekriterien · Evaluation · Testgüte

Declarations

Conflict of interest. R. Sacher and D. Loudovici-Krug declare that they have no competing interests.

For this article no studies with human participants or animals were performed by any of the authors. All studies mentioned were in accordance with the ethical standards indicated in each case.

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Spinal mobilization in infants reconsidered

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Spinal mobilization in infants reconsidered

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ABSTRACT

In this letter to the editor, we discuss additional viewpoints and identify relevant literature to supplement the evidence statement of the authors. We want to make a positive contribution to the discussion about Pediatric Manual Therapy.

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KEYWORDS
Manual therapy; infant; cervical dysfunction

The European Workgroup for Manual Medicine (EWMM) Netherlands has taken note of the contents of the recently published evidence-based statement: 'Spinal manipulation and mobilisation in paediatrics – an international evidence-based position statement for physiotherapists' (Gross A. et al. 2024) [1]. We would like to point out some gaps in this statement on which the general advice against spinal mobilization in infants is based.

(1) The conclusion to advice against spinal mobilization in infants is debatable. The symptoms mentioned, such as redness of the face, perspiration, reflux, and temporary apnea are not life-threatening and can be explained as normal, vegetative responses [2]. Spinal mobilization in infants is a safe treatment technique [3].
(2) The data collection of the Delphi panel is incomplete in several respects. For instance, the clinical data available online which have been gathered by EWMM Netherlands since 2006 have been disregarded [4].
(3) Extrapolation from specific treatments performed by non-manual therapists with severe consequences to pediatric manual therapists [5,6] is incorrect and therefore should not result in generalizing negative statements regarding the use of manual therapy mobilization techniques.
(4) There is a publication bias; available articles with positive conclusions are missing and will continue to be missing because the authors do not see the need for any further investigation into mobilization in infants [7–11].
(5) The systematic review of Driehuis et al. from 2019 [3] and the study of Sacher from 2018 [12] are not included in table 2, which is therefore incomplete.
(6) The psychometric properties of outcome measures mentioned by the Taskforce in the item 'upper cervical dysfunction' are incomplete (table 2), while this evidence is available [12].
(7) The composition of the Taskforce does not represent the delegation of the Dutch Association for Manual Therapy (NMVT) and its available clinical and scientific evidence.
(8) The more evidence-based interventions/alternative treatment choices for mobilization mentioned on page 18 are not substantiated by any explanation or references to literature. We are not aware of any alternative and effective treatments for persistent positional preference in infants with no apparent medical pathology. In the clinic, many collegues throughout the world see a group of infants with treatment-resistant positional preference which is unbreakable. The evidence on which the pediatric physiotherapy treatment of this target group is based, is limited and primarily focuses on the outcome measure of deformative plagiocephaly and not on the mobility of the cervical spine [12–16].

There is recent external evidence available regarding mobilization of the cervical spine in infants with a persistent positional preference other than torticollis. The authors received the correct information and articles in digital correspondence with Sacher et al. on 17 and 18 August 2023. Therefore, based on this input, the arguments used by the authors to advice against spinal mobilization in infants on page 8 must be seriously reconsidered.

Finally, I'm pointing out that there was no consensus in the expert panel on cervical spinal mobilization in infants. However, there was consensus within the panel on manipulation.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributor

Eric Saedt is a manual therapist with a 27 years long of experience in treating children and infants among other things, for the benefit of functional disorders of the cervical spine. He collaborates with colleagues teaching Manual Therapy to provide training for pediatric Manual Therapists as well as ongoing education in this field. Eric is an active member of the Dutch professional association NVMT and has participated in numerous committees, working groups, etc. He has contributed to the development of scientific research and has independently published on this topic, among other subjects. Eric is a member of the board of directors of health clinic Schaafdries, Ravenstein, Netherlands.

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Tendential and unscientific opinion regarding spinal manipulative therapy in the pediatric population

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In the present work by the research group around Olson et al., the importance of manipulative and mobilizing techniques for children and adults is discussed. The authors differentiate between therapeutic applications at different ages and according to the question of harm/benefit. The authors also focus on the question of plausibility and lack of evidence. They refer to a wide variety of works and reviews, although they also draw on older publications in their work [1–4]. More recent references also take papers up to 2024 into account [5–8].

In our opinion, some points regarding the authors' statements should be viewed extremely critically in the context of a scientific discussion. For the sake of clarity, we would like to limit ourselves to three points of criticism and explain them.

Evidence

In their argument, the authors refer to a lack of evidence in the manual medical treatment of children. There are a number of publications in this regard that are based on expert opinions. Low evidence does not mean that there is no effectiveness. Our expert assessment by medical therapists who have been working for many years and have practical experience with manual medical therapy forms and results [9] is therefore not based solely on literature research. This puts manual medicine on the same level of evidence as pediatric orthopedics.

The question that arises is why the authors deliberately chose not to include two double-blind randomized clinical trials (RCT) studies [10–12] that demonstrated the efficient and highly significant effectiveness of a single-use manual medical treatment in a single center ($n = 72$; II-a level) [10]. The results were impressively confirmed in the second multicenter study ($n = 171$; I-b level) [11,12]. This meant that the working group was able to present the highest level of evidence for therapeutic procedures in infancy, both in general and for the indication 'postural and movement asymmetry' and thus well ahead of physiotherapy and other types of treatment [13,14]. The results were also acknowledged in a review by the European Scientific Society of Manual Medicine (ESSOMM) [15].

The studies [10–12] presented by the ZiMMT working group were not taken into account when assessing the evidence, although N. Milne and J. Pool were not only aware of the existence of the studies and there was also a professional exchange with the first author (personal statement and e-mail documentation R. Sacher). Nevertheless, the results of these studies were not included in the evidence assessment.

It is not clear to us why the authors, against their better judgment, ignored these results. At least we would describe this approach as unscientific, just as unscientific and tendentious as the statement in the headline 'Stop the madness'. There can be different opinions on the matter in the scientific discussion, 'Madness' does not belong here. One can only speculate about the actual motivation behind the publication of this article, which is part of a series of articles [7,16,17] with the same tenor. There were also objections to this from Saedt [18]. Incidentally, the authors seem to have missed the fact that the article by Henderson and Brismée [7] was cited twice.

Manual medicine for infants and young children

Manual medicine has already shown in the last millennium that it has found its place in conventional medicine. It is also increasingly being used in the diagnosis and therapy of infants, small children and school children. Its strength lies primarily in its claim to be primarily a differential diagnostic medicine. Therefore, the authors' accusation that manual medicine prevents or delays the recognition of other causes is unfounded. Finding and making a diagnosis is precisely the expertise and primary task in medical manual medicine or chirotherapy. Early diagnosis in

particular helps to prevent long illness careers or to initiate further complementary or further diagnostics. In our opinion, there is no need for any further decision tools for physiotherapists [7].

Collett and Martiniuk [19–23] prospectively followed infants with plagiocephaly and found that otherwise healthy children with cephalic asymmetry at different ages were more likely to display abnormalities in terms of cognitive and language skills compared to children without asymmetry and showed motor development. They saw the reason for this in early childhood posture and movement asymmetries, i.e. the spectrum of treatment of infants in manual medicine.

Harmful effects of manual medicine on infants and young children

The authors accuse manual medicine of causing 'harm' to infants and small children in particular and exposing them to 'adverse effects'. These are quoted by the authors [3,16], but unfortunately not explained in more detail. It remains unclear which specific treatment techniques are being referred to here. On the other hand, incidents are cited that resulted from incorrect physiotherapeutic treatments (Vojta method), but are always incorrectly attributed to manual medicine [13].

Notes on contributor

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