

DYNAMICS OF WELLNESS PROGRAMS AS RECOVERY THERAPY FOR CHILDREN IN PUBERTY: AN ANTHROPOLOGICAL PERSPECTIVE

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ABSTRACT

Puberty is a period of rapid biological, psychological, and social transition in which recovery, movement, sleep, stress regulation, body image, family relationships, and cultural expectations interact. This paper examines wellness programmes for adolescents from an anthropological perspective, with attention to recovery-oriented massage and other non-pharmacological practices. A structured narrative review integrated with World Health Organization guidance with research on adolescent wellbeing, physical activity, and pediatric massage. Results support a multidimensional model combining physical activity, adequate recovery, supportive relationships, relaxation, culturally appropriate touch, health education, and professional oversight. Evidence for massage in adolescents remains limited and condition-specific; therefore, it should not be presented as a universal therapy. An illustrative logistic map represents nonlinear changes in participation and adaptation across program development. Effective programmes should prioritize consent, safeguarding, developmental appropriateness, inclusion, family and adolescent participation, and measurable outcomes. Future research should combine longitudinal, clinical, qualitative, and ethnographic methods across diverse adolescent populations internationally.

Keywords: *adolescence; puberty; wellness programmes; recovery; massage; physical activity; wellbeing; anthropology; healthy lifestyle; logistic map*

INTRODUCTION

Adolescence is the transition between childhood and adulthood and is commonly defined by the World Health Organisation (WHO) as ages 10–19 years (30). Puberty occurs within this wider developmental period and involves rapid physical growth, hormonal change, sexual maturation, cognitive development, emotional reorganization, and changing social relationships (4-6, 16-20). These processes do not occur in isolation. They are shaped by family life, peers, schools, socioeconomic circumstances, gender expectations, cultural beliefs, access to recreation, health services, and the environments in which young people live (2, 8-10, 21). WHO therefore frames adolescent wellbeing as multidimensional and emphasizes supportive relationships, opportunities to develop, appropriate health services, safe environments, and meaningful adolescent participation (31). An anthropological perspective is particularly valuable because puberty is simultaneously biological and cultural (7, 11). Societies differ in how they interpret bodily maturation, independence, gender roles, privacy, acceptable touch, sport participation, beauty,

strength, stress, and self-care. Wellness programmes designed for young people must therefore avoid treating adolescents as smaller adults (7, 14). Developmentally appropriate programmes should recognize changing bodies, emerging autonomy, sensitivity to peer evaluation, body-image concerns, family influence, and the importance of consent and dignity (15, 22). Contemporary wellness programmes may combine physical activity, recovery routines, relaxation, sleep education, breathing practices, outdoor recreation, healthy nutrition education, social connection, and, in some settings, massage or other manual interventions (1, 12, 13). WHO reports that regular physical activity benefits children and adolescents by supporting bone health, healthy muscular development, motor development, cognitive function, and mental wellbeing (29, 32). Nevertheless, a large proportion of adolescents globally do not meet recommended activity levels. This creates a strong rationale for programmes that make movement enjoyable, socially supportive, accessible, and sustainable rather than narrowly performance oriented. Recovery is also important during puberty (26, 27). Growth, school demands, sport, social pressure, digital engagement, and changing sleep patterns can interact with fatigue and perceived stress. In this context, recovery should be understood broadly: not as a single treatment, but as the restoration of physical and psychological resources through sleep, appropriate training load, rest, nutrition, relaxation, supportive relationships, and timely health care (3). Wellness programmes can contribute when they strengthen these routines without medicalising normal developmental changes. Massage is one possible recovery-oriented component, but evidence requires careful interpretation (27). Research on pediatric massage includes heterogeneous populations, ages, conditions, techniques, and outcomes (22). A rapid review of paediatric procedural pain identified trials in which massage was associated with lower pain in several clinical contexts, while an umbrella review published in 2024 reported benefits for selected outcomes primarily in infants and children under five (3). Earlier reviews of pediatric massage found possible effects on anxiety, muscle tone, and arthritis pain but also emphasized methodological weaknesses. Evidence specific to healthy adolescents in puberty is therefore much thinner than evidence for younger children or selected clinical populations (21). Safety is especially important. Children and adolescents are a protected population, and massage or manual interventions should never be assumed to be harmless simply because they are non-pharmacological (23). Published reviews have documented that adverse events are uncommon but possible. Programmes involving touch require informed parental or guardian procedures where applicable, adolescent or consent consistent with law and setting, explicit respect for refusal, privacy, professional boundaries, safeguarding, appropriate screening, trained practitioners, and referral when symptoms suggest a condition requiring medical assessment (24). The anthropological dimension of touch further complicates program design. Touch may be interpreted as care, comfort, professionalism, intimacy, ritual, authority, or intrusion depending on

the participant and cultural setting. Puberty can heighten sensitivity to bodily boundaries (33). Therefore, recovery massage for adolescents should be optional rather than assumed, should use clear explanations, and should allow equivalent non-touch recovery choices (30, 25). This person-centered approach aligns wellness with autonomy rather than compliance (27). The present paper examines the dynamics of wellness programmes during puberty with a focus on recovery, healthy lifestyle, and cautious integration of massage (28). It proposes that program development is nonlinear because participation, motivation, social acceptance, professional practice, and perceived benefit influence one another over time (29). A logistic map is therefore introduced as a conceptual visualization of iterative adaptation. It is not a model of clinical effectiveness. The study aims to integrate developmental health evidence with anthropological considerations to identify a framework suitable for future research and responsible practice.

METHODS

The study employed a conceptual-historical and interpretive research design to examine how manual therapy and massage techniques have evolved within changing cultural, therapeutic, recreational, and wellness contexts. Rather than reconstructing the history of manual therapy as a simple chronological sequence, the analysis focused on the processes through which practices of therapeutic touch have been preserved, modified, institutionalized, and reinterpreted across different periods and professional environments. The documentary material comprised scientific publications, historical accounts, professional literature, and international health-policy documents addressing manual therapy, massage, therapeutic touch, traditional healing practices, recovery, recreation, and wellness. Attention was given to sources describing changes in the social meaning of touch, the transmission of practical knowledge, the emergence of professional therapeutic systems, and the increasing influence of scientific validation, education, regulation, and safety standards. Peer-reviewed publications and documents issued by recognized international health organizations were used to establish the contemporary scientific and policy context. The material was examined through comparative interpretive analysis. Instead of applying predetermined thematic categories, the analysis traced relationships among three interconnected processes: the historical transformation of techniques, changes in their cultural and professional meanings, and their contemporary repositioning within health, recovery, recreation, and wellness practices. This approach enabled manual therapy to be considered not only as a collection of physical techniques but also as an evolving form of embodied knowledge shaped by interactions among practitioners, recipients, institutions, cultural traditions, and changing concepts of health. A second analytical component explored the dynamic character of technique development. Historical change was interpreted as a process involving periods of

innovation, diffusion, professional acceptance, modification, competition, standardization, and renewed adaptation. To represent this process graphically, a logistic-map model was used as a conceptual visualization:

$$x_{n+1} = r x_n (1 - x_n)$$

where x represents the relative state of development or adoption of a technique at a given stage and r represents the intensity of the feedback influencing its subsequent evolution. The logistic map was employed as a heuristic representation of nonlinear change, rather than as a statistical model of therapeutic effectiveness or historical prevalence. No clinical, epidemiological, or market observations were fitted to the equation. This methodological approach therefore combines historical interpretation, anthropological analysis, and nonlinear conceptual modelling to explore manual therapy as a continuously evolving practice situated at the intersection of culture, health, recovery, recreation, professional knowledge, and wellness lifestyles.

RESULTS

Developmental and anthropological dimensions

The review identified adolescence as a period in which wellness behavior is shaped by interacting with biological and social systems (tab.1).

Table 1. Developmental and anthropological considerations for wellness programmes during puberty.

Programme dimension	Puberty-related consideration	Anthropological consideration	Recommended design principle
Physical activity	Rapid growth and changing coordination; variable maturity	Sport and body ideals differ by gender, class and culture	Offer varied, enjoyable, non-stigmatizing movement options
Sleep & recovery	Changing sleep timing, school and training demands	Family routines and educational schedules shape sleep opportunity	Teach recovery routines and monitor overload
Massage/manual recovery	Body sensitivity, privacy and developmental variation	Touch has culturally specific meanings and boundaries	Optional use, clear consent, trained practitioners, alternatives
Mental wellbeing	Identity development, peer pressure and emotional change	Help-seeking and distress may be culturally interpreted differently	Provide supportive, non-stigmatizing pathways and referral
Nutrition/healthy habits	Growth increases nutritional demands	Food practices are family- and culture-dependent	Use family-aware education; avoid restrictive wellness messaging
Participation & autonomy	Growing capacity for decision-making	Family authority and adolescent autonomy vary by context	Include adolescents in programme design and choices

WHO guidance emphasizes puberty, physical and emotional development, mental health, positive development, physical activity, healthy lifestyles, autonomy, parenting support, school performance, and environmental determinants as relevant priorities for ages 10–19. From an anthropological perspective, these priorities are mediated by culturally specific expectations concerning independence, gender, body image, sport, family authority, privacy, and health practices. Consequently, standardized wellness packages are unlikely to be equally acceptable or effective across populations

Evidence profile for recovery-oriented components

The strongest general evidence identified for healthy adolescents concerns physical activity and supportive wellbeing environments rather than massage as a universal recovery therapy. WHO recognizes significant physical and mental health benefits of regular physical activity in children and adolescents. By contrast, pediatric massage research is heterogeneous. Reviews report promising outcomes in selected pediatric settings, including procedural pain and some anxiety or musculoskeletal outcomes, but the age distribution and clinical contexts limit direct inference for healthy pubertal adolescents. Safety reporting also remains an important research need (tab.2).

Table 2. Evidence-informed components of adolescent wellness and recovery programmes.

Component	Evidence relevance	Potential wellness role	Research/safety note
Regular physical activity	Strong general adolescent-health relevance	Fitness, bone and muscle development, motor/cognitive health, wellbeing	Individualize intensity and account for health conditions
Sleep/recovery education	High developmental relevance	Supports recovery routines and self-regulation	Study interactions with school, sport and digital habits
Relaxation/breathing	Plausible low-risk supportive practice	Stress regulation and body awareness	Avoid replacing indicated mental-health care
Massage	Condition- and age-specific pediatric evidence; limited healthy-adolescent evidence	Optional relaxation or selected symptom support	Consent, safeguarding, screening and adverse-event monitoring essential
Social/recreational activities	Consistent with multidimensional wellbeing	Belonging, enjoyment and adherence	Ensure inclusion and avoid stigma
Health education	Consistent with preventive adolescent care	Builds health literacy and self-management	Use age-appropriate, culturally responsive information

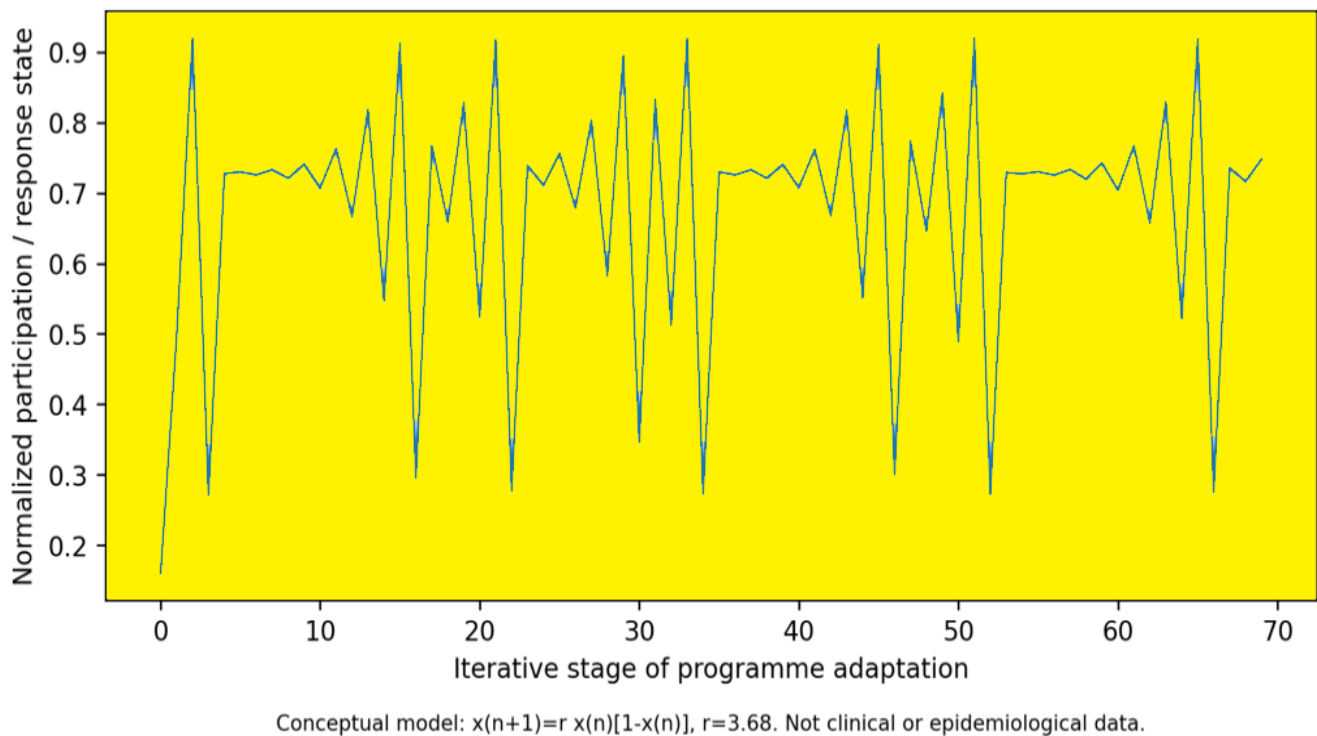


Figure 1. Logistic map of adolescent wellness-program dynamics. Conceptual model

Logistic-map representation of program dynamics

The conceptual logistic map illustrates how program participation and response may change nonlinearly as feedback increases (fig. 1). Early implementation may show slow uptake; positive peer influence, perceived benefit, family support, and accessible scheduling may accelerate participation. At higher levels of feedback, competing preferences, developmental changes, program fatigue, school demands, or cultural resistance can produce instability and require redesign. The figure should be interpreted as a metaphor for adaptive program management rather than a prediction of individual health outcomes.

Integrated framework

The synthesis supports a six-domain framework linking pubertal development with culture and social context, safety and professional oversight, physical activity and recovery, psychological self-regulation, and equitable access. Wellness is treated as an enabling environment and set of healthy routines rather than as a substitute for medical or psychological treatment (fig.2).

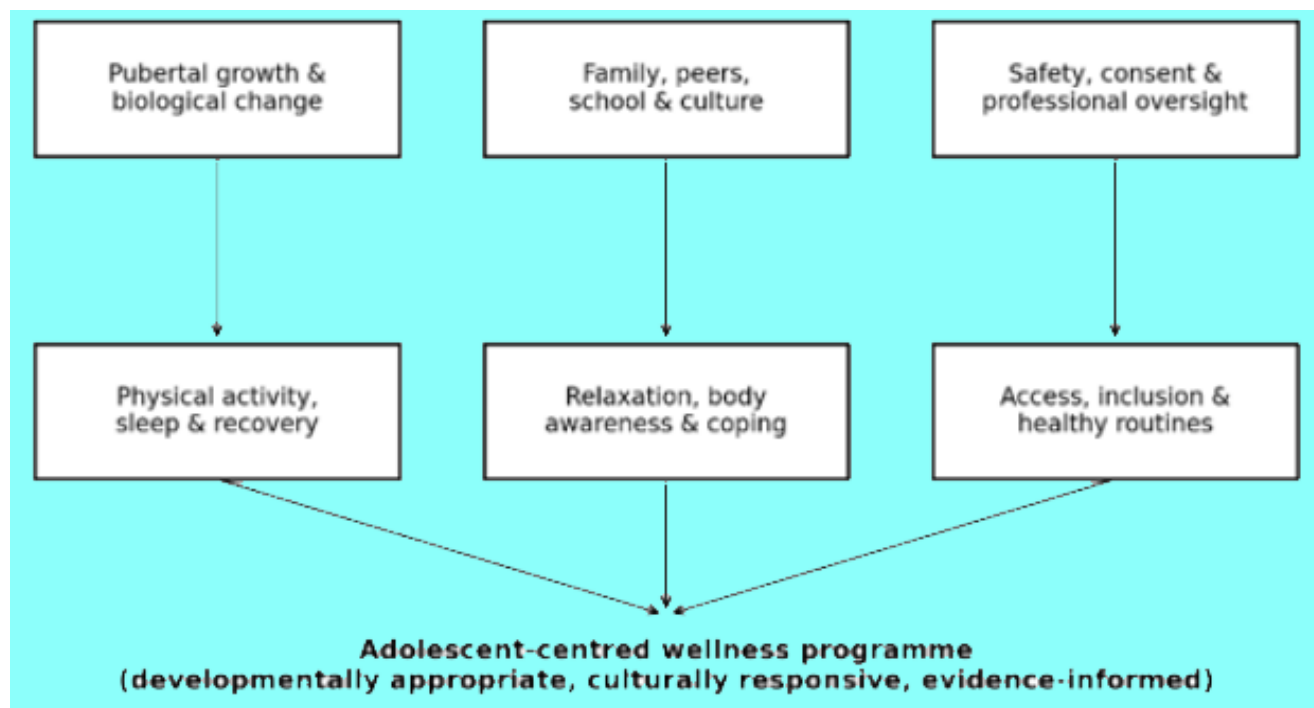


Figure 2. Anthropological framework for wellness and recovery during puberty. Authors' synthesis.

DISCUSSION

Wellness programmes for adolescents should reflect the biological, psychological, and social changes of puberty rather than reproduce adult wellness models. An anthropological perspective is valuable because it considers not only health outcomes but also cultural acceptability, autonomy, body image, family relationships, and individual perceptions of wellbeing. Recovery massage may complement sport, recreation, and wellness programmes, although current evidence for healthy adolescents remains limited. Most pediatric studies concern younger children or specific clinical conditions. Massage should therefore be considered an optional recovery and relaxation intervention rather than a universal therapy. Consent, privacy, safeguarding, practitioner competence, and the adolescent's right to refuse touch are essential components of program quality. Physical activity provides a stronger evidence-based foundation for adolescent wellness. Recovery strategies should complement regular movement through adequate rest, sleep, relaxation, stress management, and recreational activities. Massage may be incorporated when appropriate, professionally supervised, and accepted by the participant. The proposed logistic map illustrates that participation and adaptation may develop nonlinearly. Program intensity does not necessarily produce proportional improvements because engagement can be influenced by peers, family attitudes, school schedules, body image, motivation, and cultural factors. Longitudinal and mixed-method research could therefore combine physical activity, sleep, recovery, stress, quality of life, and adherence measures with

interviews exploring adolescents' experiences. The principal limitation is the restricted evidence concerning massage specifically among healthy adolescents during puberty. Furthermore, the logistic map is conceptual rather than a validated clinical model. Future controlled and participatory studies should distinguish wellness outcomes from clinical treatment and evaluate the safety, acceptability, and effectiveness of recovery programs across adolescent populations.

CONCLUSION

Wellness programmes during puberty should be understood as developmentally sensitive, culturally situated systems that support healthy routines rather than as standardized packages of recovery treatments. The evidence base strongly supports regular physical activity and supportive environments as foundations for adolescent health and wellbeing. Massage and other manual interventions may have a role in selected pediatric contexts and may be acceptable as optional relaxation or recovery practices, but evidence specific to healthy pubertal adolescents remains insufficient for universal therapeutic claims. An anthropological perspective emphasizes body meanings, family and peer relationships, culture, autonomy, consent, privacy, access, and the social organization of care. The proposed logistic map illustrates the nonlinear character of program participation and adaptation, while the integrated framework provides domains for future evaluation. Responsible programmes should combine adolescent participation, safeguarding, trained supervision, inclusion, measurable outcomes, and clear referral pathways. Future research should integrate longitudinal clinical measures with qualitative and ethnographic evidence to identify which wellness components are safe, acceptable, and beneficial for diverse adolescents.

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REFERENCES

1. Angelcheva, M. (2019). Effects of combination between relaxation massage and Dr. Bach flower remedies on everyday stress. In *Proceedings of the International Scientific Congress "Applied Sports Sciences" and Balkan Scientific Congress "Physical Education, Sports, Health"* (pp. 348–352). NSA Press.

2. Angelcheva, M., & Petkova, S. (2019). Effects of combination between relaxation massage and Dr. Bach flower remedies on everyday stress. In *Proceedings of the International Scientific Congress "Applied Sports Sciences" and Balkan Scientific Congress "Physical Education, Sports, Health"* (pp. 348–352). NSA Press.
3. Beider, S., & Moyer, C. A. (2007). Randomized controlled trials of pediatric massage: A review. *Evidence-Based Complementary and Alternative Medicine*, 4(1), 23–34. <https://doi.org/10.1093/ecam/nel068>
4. Dimitrova, B. (2019). *Intelligent competencies for niche tourism* (Monograph, in Bulgarian). Avangard Prima.
5. Dimitrova, B. (2019a). Quality assessment of standards for wellness services and certified skills of specialised staff. *Trakia Journal of Sciences*, 17(2), 143–149. <https://doi.org/10.15547/tjs.2019.02.007>
6. Dimitrova, B., et al. (2020). *Dynamics of well-being and happiness indices: Comparative analysis based on global databases and United Nations reports* (Monograph, in Bulgarian). Avangard Prima.
7. Dimitrova, B., Izov, N., Aleksandrova, V., Iosifov, R., & Trendafilov, D. (2021). *Smart cognitive toolkit: External assessment of professional competencies for specialised staff in niche tourism* (Monograph, in Bulgarian). NSA Press.
8. Dimitrova, B., & Nesheva, I. (2021). Research to improve health care for women with normal pregnancy applying recreational wellness activity. *Trakia Journal of Sciences*, 19(Suppl. 1), 684–690.
9. Dimitrova, B. (2023). Educational policy, specialised staff, innovations and the recreational industry. *Strategies for Policy in Science and Education*, 31(5), 532–546. <https://doi.org/10.53656/str2023-5-6-imp>
10. Dimitrova, B. (2025a). Mechanical and energy efficiency in wellness programs with cyclical movements. *Series on Biomechanics*, 39(1), 59–67. <https://doi.org/10.7546/SB.01.08.2025>
11. Dimitrova, B. (2025b). Niche tourism: Innovations and quality culture in specialized workforce development. *German International Journal of Modern Science*, (101), 88–93. <https://doi.org/10.5281/zenodo.15124768>
12. Dimitrova, B., et al. (2025). Scientific evidence for personalisation of SPA services at the cellular level. *German International Journal of Modern Science*, (100), 42–46. <https://doi.org/10.5281/zenodo.15061591>
13. Dimitrova, B. (2026). Assessing the health benefits of forest art therapy: Evidence from Bulgaria. *Forestry Ideas*, 32(1), 16–18.
14. Dimitrova, N. (2019a). Resistance while managing its own inertial power field. *Trakia Journal of Sciences*, 17(1), 631–634.
15. Dimitrova, N. (2019b). Reactions of the motor system in local and global activities. *Trakia Journal of Sciences*, 17(1), 635–637.
16. Dimitrova, N. (2020). Control of the spatial structure in preschool children. *Trakia Journal of Sciences*, 18(1), 854–856.
17. Dimitrova, N. (2025). Specificity of balance in weightlifting. *German International Journal of Modern Science*, (102), 63–66.
18. Dimitrova, N. (2026). Comparative biomechanical analysis of performance against a real target and a kata in karate. *Trakia Journal of Sciences*, 24(2). <https://doi.org/10.15547/tjs.2026.02.012>
19. Huang, A., & Roth, C. L. (2021). The link between obesity and puberty: What is new? *Current Opinion in Pediatrics*, 33(4), 449–457.
20. Jasik, C. B., & Lustig, R. H. (2008). Adolescent obesity and puberty: The "perfect storm." *Annals of the New York Academy of Sciences*, 1135, 265–279. <https://doi.org/10.1196/annals.1429.009>
21. Karkhaneh, M., Zorzela, L., Jou, H., Funabashi, M., Dryden, T., & Vohra, S. (2020). Adverse events associated with paediatric massage therapy: A systematic review. *BMJ Paediatrics Open*, 4(1), e000584.

- <https://doi.org/10.1136/bmjpo-2019-000584>Li, X., et al. (2024). Pediatric massage therapy in infants and children under 5 years: An umbrella review of systematic reviews. *Heliyon*, 10(16), e35993.
22. NCD Risk Factor Collaboration (NCD-RisC). (2024). Worldwide trends in underweight and obesity from 1990 to 2022: A pooled analysis of 3,663 population-representative studies with 222 million children, adolescents, and adults. *The Lancet*, 403, 1027–1050. [https://doi.org/10.1016/S0140-6736\(23\)02750-2](https://doi.org/10.1016/S0140-6736(23)02750-2)
 23. Puhl, R. M., & Lessard, L. M. (2020). Weight stigma in youth: Prevalence, consequences, and considerations for clinical practice. *Current Obesity Reports*, 9, 402–411.
 24. Rakić, J. G., Hamrik, Z., Dzielska, A., Felder-Puig, R., Oja, L., Bakalár, P., et al. (2024). *A focus on adolescent physical activity, eating behaviours, weight status and body image in Europe, Central Asia and Canada: HBSC international report from the 2021/2022 survey* (Vol. 4). WHO Regional Office for EU.
 25. Rankin, J., Matthews, L., Cobley, S., Han, A., Sanders, R., Wiltshire, H. D., & Baker, J. S. (2016). Psychological consequences of childhood obesity: Psychiatric comorbidity and prevention. *Adolescent Health, Medicine and Therapeutics*, 7, 125–146. <https://doi.org/10.2147/AHMT.S101631>
 26. Sanders, R. H., Han, A., Baker, J. S., & Cobley, S. (2015). Childhood obesity and its physical and psychological co-morbidities: A systematic review of Australian children and adolescents. *European Journal of Pediatrics*, 174, 715–746. <https://doi.org/10.1007/s00431-015-2551-3>
 27. Tomova, T., & Angelov, B. (2023). Wellness practices for healthy ageing. *Trakia Journal of Sciences*, 21(Suppl. 1), 445–450. <https://doi.org/10.15547/tjs.2023.s.01.074>
 28. Tomova, T. (2024). Modeling rituals through combined wellness influences. *Smart Innovations in Recreational, Wellness Industry and Niche Tourism*, 6(2), 15–24.
 29. Tomova, T. (2025). The impact of manual wellness therapies and body massage: A stress relief effect. *German International Journal of Modern Science*, 105, 23–27.
 30. World Health Organisation. (2024, October 11). *Six actions to improve adolescent health*. <https://www.who.int/news-room/spotlight/six-actions-to-improve-adolescent-health>
 31. World Health Organisation. (2025, December 8). *Obesity and overweight*. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>
 32. World Health Organisation. (2026). *Adolescent health*. <https://www.who.int/health-topics/adolescent-health>
 33. World Health Organisation. (2026). *Prevalence of overweight and obesity among adolescents: Indicator metadata*. WHO Global Health Observatory. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/prevalence-of-overweight-and-obesity-among-adolescents>

Research and Safety Note

This paper is a scientific narrative review and conceptual framework. It does not recommend massage or any wellness intervention as treatment for a specific child or adolescent. Clinical symptoms, injuries, persistent pain, mental-health concerns, abnormal pubertal development, or other health problems require assessment by appropriately qualified health professionals.