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# Mapping the 'lifelong journey' of physical literacy: a biographical assessment method for the physical activity and health context

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## ABSTRACT

Physical literacy (PL) describes individuals' unique relationship with physical activity by integrating physical, cognitive, affective, and social aspects. The person-centered concept highlights a 'lifelong journey' for each individual and postulates beneficial effects on biopsychosocial health. Despite extensive suggestions on how to assess the concept, no instrument has so far sufficiently aligned with these 'individual journeys' for PL. Therefore, the goal of this conceptual article is to introduce the *biographical PL mapping* (BMAP-PL) as a purposive, flexible, and paradigmatically open method for the broad physical activity and health context. Intending to provoke individual narratives by plotting domain-driven courses across the lifespan, the BMAP-PL involves four sequential phases guided by a trained facilitator: (a) introduction and overview; (b) personalization and registration of life events; (c) evaluation and biographical visualization of PL dimensions; (d) final overview. The idiosyncratic courses can undergo both qualitative and quantitative analysis, including a potential for synthetic integration. Qualitative analyses can span the identification of life events, transition phenomena, domain-differential analyses, and inter-individual patterns via narrative analysis, thematic analysis, typological analysis, or the grounded theory approach. We suggest quantitative analyses with descriptive and inferential statistical potential on the intra-individual, inter-individual, and group/population level. Given the profound cognitive engagement with the complex behavior of physical activity, BMAP-PL allows for a smooth transition to interventional endeavors (e.g. self-exploration of identity facets, prospective projections, goal setting). The application of the method has value for both research and practice but is based on requirements on the personal and atmospheric level. Emphasizing the need to complement the conceptual ideas through empirical data, we conclude by outlining an agenda for future activities.


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## Physical activity, health, and the physical literacy concept

Given the indisputable benefit of physical activity (PA) for health (Posadzki et al., 2020; Warburton & Bredin, 2017), individuals are advised to lead physically active lifestyles across the entire lifespan (World Health Organization, 2020). However, large-scale surveys have consistently revealed high physical inactivity rates across most societies (Guthold et al., 2018). Against this background, the World Health Organization (2020) has called for a multi-sector approach in combatting the physical inactivity pandemic, including, for instance, schools, universities, communities, and policies. Simultaneously, the society suggests to systematically foster physical literacy (PL) on the individual level (World Health Organization, 2020). Although the concept has gained considerable attention in recent years (Young et al., 2020), there is currently no universally shared definition on PL and its included components (often called 'domains') (Bailey et al., 2023; Martins et al., 2021). For instance, the International Physical Literacy Association (IPLA) and Canada comprehend PL as the 'motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life' (IPLA, 2017; Tremblay et al., 2018). According to Sport Australia, the concept 'reflects ongoing changes integrating physical, psychological, social and cognitive capabilities [... and] is vital in helping us lead healthy and fulfilling lives through movement and physical activity' (Sport Australia, 2019).

Despite some nuances in conceptualization, PL is often collectively described as a 'holistic' (Edwards et al., 2017; Holler et al., 2019) endeavor in embracing the person-related requirements for physically active lifestyles. The concept grounds on monist, existentialist, and phenomenological assumptions of human existence (Pot et al., 2018; Whitehead, 2007), which qualifies the framework with its philosophical underpinnings as a person-centered approach to substantiate these individual requirements (Brown et al., 2020). In line with these anthropological premises, PL is not restricted to a certain target group (e.g. athletes or healthy individuals) but concerns each individual by describing their idiosyncratic relationship with movement (Durden-Myers et al., 2018; Rudd et al., 2020). PL changes over time, develops with the age, and has no end-state (Edwards et al., 2017). As an embodied characteristic, individual PL courses may progress or digress, depending on maturation, growth, experiences, and life circumstances (Allan et al., 2017). In this context, PL has been illustratively delineated as a 'lifelong journey' (Cairney et al., 2019; Green et al., 2018; Whitehead, 2010; Young et al., 2020) with an inherent potential to enable comprehensive 'human flourishing' (Durden-Myers et al., 2018). Accordingly, we aim to highlight the biographical situatedness of PL (Schaerz & Balderson, 2020; Taplin, 2019) hypothetically generating individualized courses across the lifespan.

## Assessment of physical literacy

Parallel to the increasing interest in the concept, researchers have undertaken strong attempts in identifying empirical ways for studying PL (Edwards et al., 2018). In line with the varying conceptualizations over the globe, most assessment instruments differ by the number of included components or subscales (Young et al., 2021). Although initial critique has been leveled on whether PL with the philosophical foundations can or should be assessed at all (Chen, 2020), it is important to acknowledge measurement efforts as part of the PL discussion, given the number of primary articles that suggested instruments or reviews that summarized operationalizations under a specific perspective (Barnett et al., 2023; Boldovskaia et al., 2023). Specifically, instruments exist for employment with children, adolescents, adults as well as individuals with disabilities (Barnett et al., 2023; Boldovskaia et al., 2023; Weerackody et al., 2023). From a theoretical standpoint, however, two reviews on PL assessments have stressed an 'oversimplification' of the holism tenet (Boldovskaia et al., 2023) or an 'un-coupling' of the design of existing assessments with the elaborate original concept (Young et al., 2021). Most instruments emphasize individual classification instead of enabling person-centered growth (Edwards et al., 2018; Young et al., 2021). Furthermore, the majority of assessment tools ignore the holistic philosophical underpinnings of PL and are instead

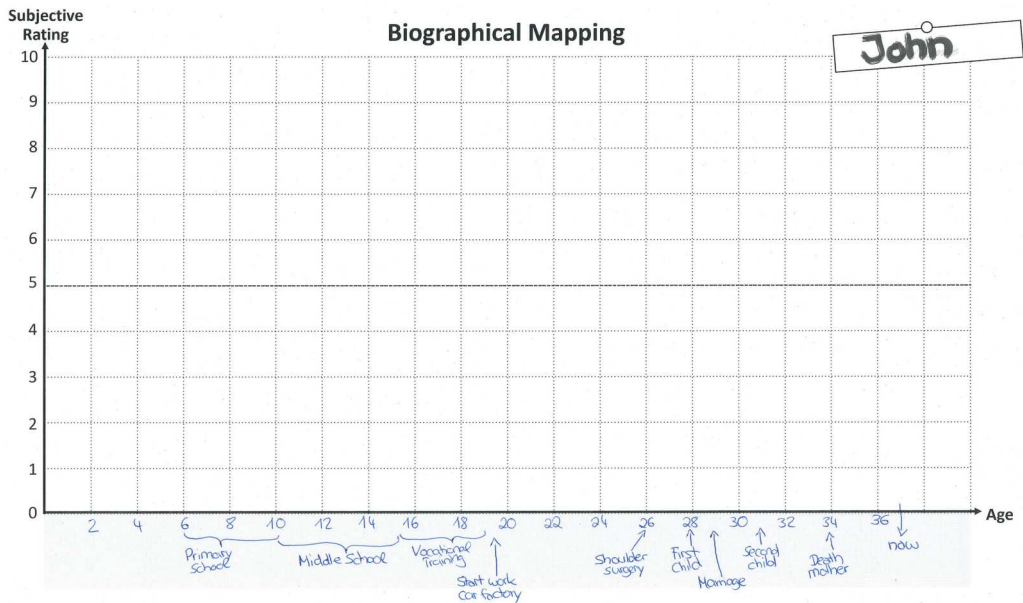
dualistic in nature (Young et al., 2021). Dudley and Cairney (2023) even argued that PL assessments diverging too strongly from the idealist conceptualization threaten quality claims and pedagogical reforms for physical education. Accordingly, a recent meta-review extracted the non-availability of qualitative assessments for the concept as a primary 'blank spot' of the PL literature (Carl et al., 2023b). In contending that current PL instruments (a) largely conflict with important theoretical assumptions of PL (monism, existentialism, phenomenology), (b) follow rather a rigid procedure with standardized instructions, limited in their ability to unfold individual's idiosyncratic relationship with movement; (c) insufficiently illuminate the biographical situatedness of PL (i.e. do not make individual's PL journey visible); (d) are largely restricted to a certain segment of life (i.e., children and adolescents); (e) are paradigmatically narrow by implying a certain data analytical direction (i.e. either quantitative or qualitative); and (f) largely require organizational re-arrangement to directly connect to reflection and intervention, the goal of the present article is to introduce biographical PL mapping as a method that contrasts and complements existing approaches for assessing PL. The proposed method not only harmonizes with professional development material being informally used in the past (Durden-Myers, 2018) but awakens the envisioned extension of a charting matrix that can "be recorded, retained, and displayed in a way that 'paints a picture' of the participant" (Whitehead, 2019).

## The biographical PL mapping (BMAP-PL)

Biographical mapping had its roots in identity research and health sociological analyses in sport (Mayer, 2010; Thiel et al., 2011) and aimed to better understand the role of life events for individuals, mostly embedded into structural conditions and social norms. The method integrates narrative interviews with visual elicitation strategies to help interviewees plot their biographical trajectories on a two-dimensional mapping grid (Schubring et al., 2019). Accordingly, the method has the potential to enrich and contextualize personal narratives, resulting in an authentic visualization of idiosyncratic courses (Barker-Ruchti et al., 2014; Schubring et al., 2019). Biographical mapping is based on the assumption that individuals can internally transform an evaluation (with a personal valence) into a metric or into gradual levels along a subjective continuum, allowing for a relative interpretation of phenomena in connection to other experiences (Paulhus & Vazire, 2007). Dynamic system theories postulate that most self-referential judgements, irrespective of whether these relate to objectifiable (e.g. body functions or motor skills) or perceived (e.g. attitudes or emotions) phenomena, are not invariant across the lifespan and fluctuate by time (Molenaar et al., 2003). This method assists to visualize fluctuations over time in the context of these life events. In summary, the biographical mapping (Andersson & Barker-Ruchti, 2019; Diehl & Lindenthal, 2021; Seiberth et al., 2022; Thiel et al., 2020b) involves the following steps: (a) introduction and overview; (b) personalization and registration of life events (x-axis); (c) evaluation and biographical visualization of PL dimensions (through lines, separate for different dimensions); (d) final overview.

### (a) Introduction and overview

Cognizant of the purpose of initiation, the facilitator (e.g. therapist, health consultant, social worker, health and physical education teacher, scientist) should strive for a calm and protected atmosphere by acting as a collaborative co-producer (Harding, 2006) with the interviewee (i.e. patient, client, pupil, study participant). The duration depends on the occasion, purpose, and context (i.e., scientific versus applied, broad focus vs. deep exploration of phenomena), the role (e.g. scientific focus versus simple self-reflection task), the combination with a formalized interview (yes versus no), the number of dimensions, and the target group (e.g. adolescent versus older adult). The facilitator explains the intention of the endeavor and acquires permission to discuss individual PL stories.



**Figure 1.** The biographical mapping with the name and the life events of the individual (hypothetical example with a 37-year-old man).

### **(b) Registration of life events**

The facilitator highlights the personal nature of the interview and, for identification and commitment purposes, writes the personal name on the sheet (see the right top of Figure 1). Subsequently, the facilitator explains to the participant that the x-axis represents the individual life course with the birth ('0 years') on the very left (where the y-axis overlaps) and the current lifetime on the right side of the sheet. Usually, the current situation is located on the very right of the sheet, but stakeholders may deliberately leave some space to make the target group reflect on the anticipated/desired course in the future as well. The facilitator divides the x-axis into well-proportioned age segments (depending on the chronological age: e.g. '2 years', '4 years', etc. for a 37-year-old individual). In addition to the chronological age numbers, the facilitator interrogates important life events (e.g. 'school entry', 'graduation', 'birth of child', 'health condition', 'severe accident', 'marriage', 'death of partner') and asks the participant to record them consecutively on the x-axis (see the grey area and an example in Figure 1). The facilitator takes a moderating role by stimulating narratives as well as providing orientation and support.

### **(c) Evaluation and biographical visualization of PL dimensions**

The facilitator gives an overview of the dimensions that the tandem is going to localize biographically. The facilitator can do this overview orally or with the support of illustrative material (e.g. images, icons, a previous exemplary mapping). The differentiation into intertwined dimensions harmonizes with the multifaceted nature of the PL concept (Edwards et al., 2017) but should align with the selected definition in the sense of a 'tight interlocking' between theory and assessment/evaluation. For instance, the facilitator can state a 'physical' (as an aggregate of fitness and motor skills, in the sense of physical competence), a 'cognitive' (as knowledge/and or understanding), a 'affective' (as feelings, motivation, and/or confidence for PA), and a 'social' dimension (Sport Australia, 2019; Sport England, 2023). Furthermore, the researcher or the tandem should define relevant external criteria, such as 'physical activity behavior' or 'subjective health' (the facilitator might also

**Table 1.** Examples of participant-oriented interview questions related to the physical literacy domains and potential outcomes.

Item number	Physical literacy aspect	Item suggestion
1*	Physical domain	At the beginning of this interview, we first want to concentrate on your body. When you think about your physical fitness and movement skills (i.e. your strength, power, endurance, agility, flexibility, balance, technique, coordination, speed): how did this develop in your life? Try to plot a course on a scale from 1-x, related to your age!
1a	Physical fitness	At the beginning of this interview, we first want to concentrate on your body. When you think about your physical fitness (i.e. your strength, power, endurance, agility, flexibility, speed): how did this develop in your life? Try to plot a course on a scale from 1-x, related to your age!
1b	Movement skills	Similarly but different from this: how did your techniques and skills develop over time (i.e. your coordination, balance, movement patterns)?
2*	Cognitive domain	In the following, I would now like to hear how much you know and knew about movement, sport and activities (i.e. the traditions, effects, principles, and methods)?
2a	Knowledge	How much personal sense could you identify in movement, sport, and activities? In the following, I would now like to hear how much you know and knew about movement, sport and activities? How well were you informed about the traditions, effects, principles, and methods of movement?
2b	Understanding	How much personal sense and meaning could you identify in movement, sport, and activities?
3*	Affective domain	As a next dimension, I would like to inquire about your attitudes and emotions for movement, sport and activities. How positive were these and how would you describe them when looking on your biography?
3a	Motivation	As a next dimension, I would like to inquire about your motivation for movement, sport, and activity. How would you describe your individual commitment to activities when looking at your biography?
3b	Confidence	And how confident were you in your abilities in movement, sport and activities? How self-assured have you been throughout life so far?
4*	Social domain	We also want to look into your interaction with others in the area of movement, sport and activities. How was your sense of belonging? How good have you been in collaborations? How were your relationships?
O1	Health	When you think your personal health status: how did it develop over your lifecourse so far?
O1a	Physical health	I now would like to know how your physical health developed over time? How does this course look like from your standpoint?
O1b	Mental health	If you agree, let us now talk about your mental health. How did this aspect behave in your life so far? Please tell me if you do not want to talk about this aspect in your life. Of course, no disadvantages will result from your decision.
O2	Physical activity behavior	When you are thinking back in your life: how active have you been in your career? How has the amount of physical activity developed over time?

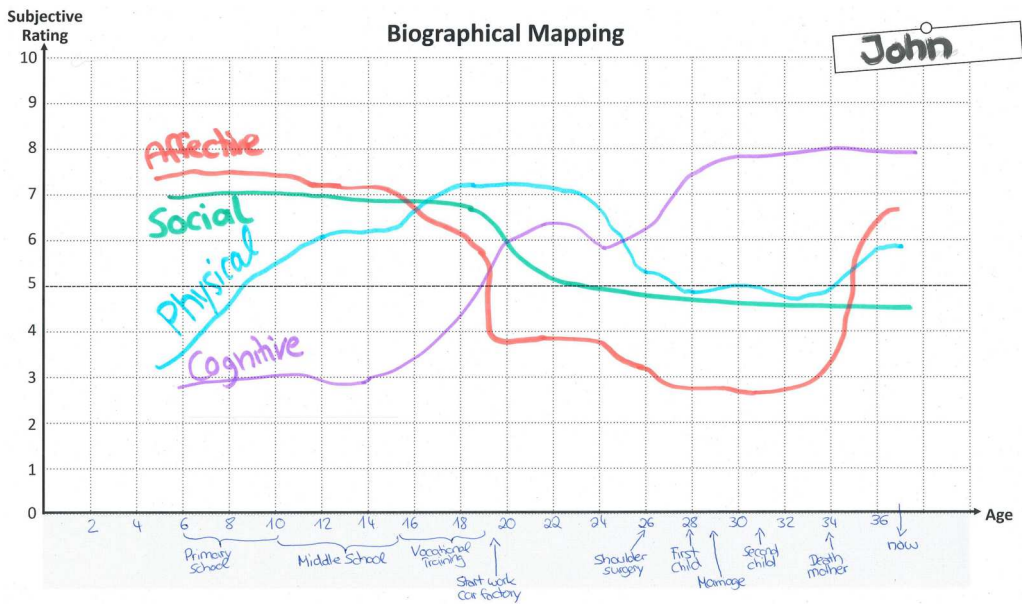
Note: The current questions most closely relate to the Australian Physical Literacy Framework (APLF) and the recent England consensus (Sport Australia, 2019; Sport England, 2023). The questions and phrases have an exemplary character and should be aligned with the framework selected. The PL dimensions logically overlap and the facilitator is invited to moderate this fact (e.g. if interviewees express difficulties differentiating aspects) or enable smooth transitions.

\*When interested in finer aspects, facilitators can specifically target (the elements as in line with the APLF): object manipulation, coordination, stability/balance, endurance, speed, reaction time, agility, strength, flexibility, ease of equipment use (physical domain); safety/risk issues, strategy and tactic knowledge, planning, rules, content knowledge, awareness, reasoning (cognitive domain); engagement, enjoyment, self-perception, self-regulation, connection to the location, attitudes (affective domain); relationships, collaboration, ethics, societal and cultural aspects (social domain).

be interested in differentiating between ‘physical health’ and ‘mental health’). We recommend the facilitator, for comprehension and thus validity reasons, to use person – and group-adjusted questions for the interaction (for some examples, see Table 1).

After providing an overview of the dimensions, the facilitator shifts the attention to the y-axis by presenting the metrics spanning a continuum from a very negative (i.e. from the minimum of 0 at the lowest end) to a very positive (maximum of 10 at the upper end of the axis) rating, concurrently communicating that the participant must transform the time-bound evaluation of the respective dimension into a subjective scaling. The interviewee is advised to plot a graphical trajectory on the mapping grid while orientating along the identified life events (Figure 2). The facilitator encourages the interviewee to underpin each course with verbalizations (e.g. while applying the think aloud technique: Charters, 2003) that allow to explore subjective causalities. When detecting phenomena of





**Figure 2.** Exemplary biographical mapping with a self-evaluation of four physical literacy domains.

Note: The selection of the dimensions for the biographical mapping should harmonize with the selection of the PL definition and framework as well as the practical application purpose or research question.

particular interest across the lifespan, the facilitator may raise provocative questions. These phenomena may, for instance, include sudden disruptions (e.g. leaps in the course), peak or bottom points, intensive changes, or an event-related inability to plot a line for a certain life period (e.g. 'I cannot remember, as this was irrelevant for me in that period'). The facilitator gains a concluding overview of a dimension and encourages its completion before moving to the next dimension.

#### (d) Final overview

After finalizing all dimensions of interest, the facilitator ensures the completion of the biographical PL mapping by explicitly asking the participant for additional comments. In line with the flexible nature of the method, the facilitator may continue with a follow-up task. For instance, the facilitator might (a) directly compare the different PL courses with the participant, (b) explore participant's learned biographical lessons (personal insights from the task), (c) derive anticipated or desired courses in the future (by continuing the x-axis; see 'introduction and overview' phase), (d) continue with an interview centering on single aspects of the task or further topics external to PL, or (e) smoothly transition to deriving an intervention plan in which the BMAP-PL represents the corresponding individual assessment (see also the 'from assessment to intervention' section). Despite the role to structure the mapping procedure, the facilitator should ensure that the interviewee(s) can, in the sense of a person-centered concept, largely articulate their personal PL journey with their own words.

The BMAP-PL can be conducted with an analogue poster (A2 size, but at least A3 size; landscape format) or in an online application. Supplementary file 1 represents a template for the BMAP-PL. A German research group has recently developed a software for use on a tablet, also allowing for an automated processing of graphs (Thiel et al., 2020a). Although the present descriptions referred to the preferred one-on-one constellation, a facilitator can also moderate the BMAP-PL in a group setting (e.g. in group therapy or in class) if the cognitive capacities and social atmosphere is given to undertake efficacious biographical reflection. In this case, the initiator should be aware

of the limited ability to perform in-depth biographical enquiries. Due to the intensive collaboration and moderation role (Harding, 2006), we suggest for an facilitator to undergo training. For instance, we identify strong congruence with conversation principles from motivational interviewing or client-centered care (Rowe, 2017), with corresponding workshops potentially delivering a good inspiration for conducting the BMAP-PL. At least, facilitators should run trials outside the intended application context before first use. In the following, we aim to present both qualitative and qualitative techniques of data analysis, highlighting that the method is also compatible with a mixed methods undertaking (O’Cathain et al., 2010).

## Qualitative approaches to data analysis

The BMAP-PL has a great analytical potential for qualitative data analysis (Schubring et al., 2019). To address specific PL related goals and research questions, we recognize a great potential for applying several methods for data analysis which suit the mapping data, open new ways of approaching PL-related questions, and are widely used in qualitative research: (i) narrative analysis, (ii) thematic analysis, (iii) typological analysis, and (iv) the grounded theory approach.

The *narrative analysis* allows to collect, describe, and analyze the qualitative data as a story, aiming for a better understanding and interpretation of a person’s perceived reality, experiences, and view of specific life events (Smith, 2016; Stapley et al., 2022). Accordingly, the application of narrative analysis enables the identification of individual health biographies and related stories for PL. Moreover, this approach can be used to recognize and interpret shared experiences related to PA and patterns of collective sense making of being an (in)active person. Using narrative analysis can add a unique dimension of interpretation to the BMAP-PL by analyzing not only what is said by the participant, but also how they verbalized and expressed their subjective experiences and views (Smith & Sparkes, 2009), e.g. about their PL journey throughout life.

*Thematic analysis* aims to detect patterns of meaning (themes) within the qualitative data, to organize those emerged themes in a potential coding scheme, as well as analyze and interpret the data based on the research question (Braun & Clarke, 2019). Therefore, thematic analysis serves to uncover the subjective meaning of life events and their specific role for changes in the PL journey. Another focus could be the reconstruction of age-specific themes and living environment-related topics associated with PA, exercise, and sport. Given the recursive process, thematic analysis does not rely on one specific theoretical framework and allows all involved persons to play an active role while having a high degree of flexibility during the process (Braun & Clarke, 2019), e.g. by not determining the size and definition of PL-related themes. When generating themes across individuals, however, applicants should be aware that the rich narratives of individuals might blur in favor of more generalizable patterns.

The idea of *typological analysis* is to cluster cases or individuals into specific categories based on their characteristics emerged from the qualitative data. Aiming to systematically generate and interpret categories of cases or individuals (Stapley et al., 2021; Stapley et al., 2022), this analysis has not only the potential to identify typical psycho-social constellations affecting the course and development of individual PL dimensions but also to reconstruct typical PL trajectories within the lifespan by identifying typical critical phases or transition phenomena leading to changes in behavioral patterns, decision making, and cognitions. The typological analysis results in structured categories, which also permits to analyze cross-case combinations by focusing on similarities and/or differences within and between cases (Stapley et al., 2021; Stapley et al., 2022) to examine, for instance, those self-reporting a stronger or weaker relationship with PA across PL dimensions. Despite their potential for an enriched picture, typological analyses also reduce individual life histories to overarching patterns, with the categorization tending to accept slight losses in individual specificities. Thus, generalized comparisons resulting from the qualitative data should be made, reflected, and discussed with caution as PL is conceptually considered a highly individual journey.



The *grounded theory approach* is an inductive method with the potential of discovering and generating new models and theories in the PL research landscape through BMAP-PL. Grounded theory embodies an iterative process in which the collected data guides the analysis and development of theory until saturation (Charmaz, 2014; Glaser & Strauss, 2017). This approach permits to develop specific models and theories, for example about the interrelation of life events, social structures, and personal characteristics in PL development or about the role and impact of ‘significant others’ (Taplin, 2019, p. 87; Whitehead, 2010, p. 187) on PL-development over the lifespan. Based on the interwoven procedure of collecting and analyzing the qualitative data back-to-back, grounded theory requests the analyst to be tightly connected to the research field and the collected data (Charmaz, 2014; Glaser & Strauss, 2017).

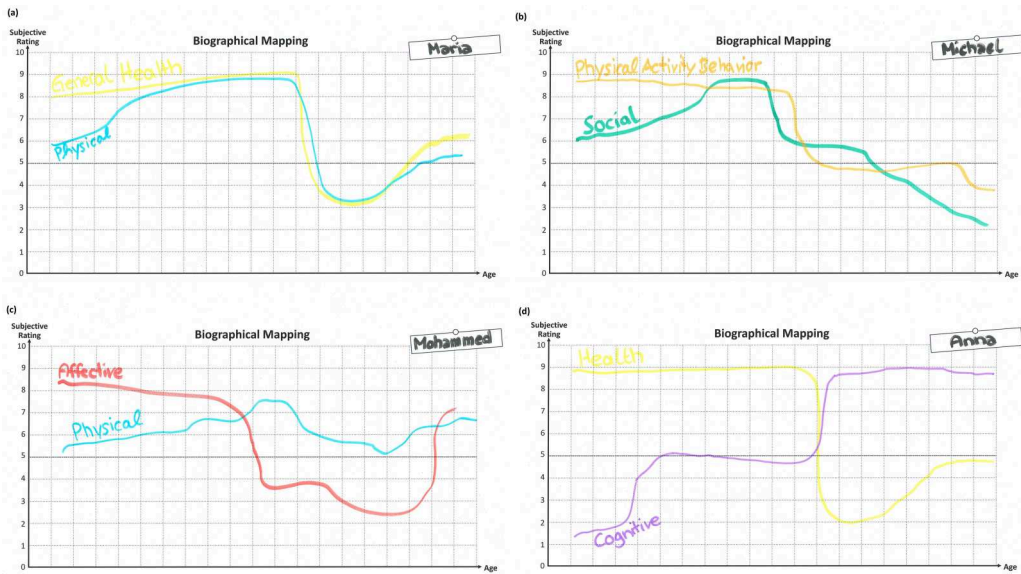
The idea that data collection and data analysis are inherently entangled and should proceed in an ‘iterative fashion’ (Smith, 2016) is a characteristic feature of qualitative research. In this regard, the mapping approach can be flexibly adjusted before and during data collection, analysis, and interpretation.

## Quantitative approaches to data analysis

When adopting a quantitative perspective, we raise suggestions for analyses on the (i) intra-individual level, (ii) the inter-individual level, and (iii) the group or population level. As part of *data preparation and cleaning*, analogue data points will first have to be digitized. In line with the Nyquist – Shannon sampling theorem (Shannon, 1949), we recommend visually extracting at least equidistant half-year values if insights are planned to be resolved to the chronological life year unit. Within the scope of a previous biographic mapping study (Thiel et al., 2020b), an almost perfect interrater agreement (intraclass coefficient = 0.991) was registered, demonstrating that fundamental errors from the human translation of an analogue into a digital course can virtually be neglected. The raw trajectories, in turn, can be transformed into polished splines using polynomial regression (e.g. linear, quadratic, cubic) under consideration of relevant statistical coefficients (e.g. determination coefficient  $R^2$ , incremental determination coefficient  $\Delta R^2$ , effect size  $f^2$  for the remaining explainable variance, and testing statistical significance of the respective polynomial coefficients) (Thiel et al., 2020b) to specify descriptive analyses or extract (un-)standardized regression coefficients.

In addition to basic descriptive analyses (see previous chapter), *intra-individual analyses* can concentrate on differences in individual mean values between PL dimensions (within-subjects effect) by encompassing either the lifespan level or only a selected life period of interest (e.g. the last ten years). For instance, practitioners might be interested in comparing individual’s perceived physical and cognitive requirements for a physically active lifestyle. As an alternative, researchers can focus associations between certain PL dimensions over time. On a phenomenological level, we can identify parallel patterns, positively associated patterns, an unassociated pattern, or even an opposing pattern. Due to the person-centered nature of the PL concept, intra-individual analyses are of outstanding relevance for the BMAP-PL (for visualizations, see Figure 3).

On the *inter-individual level*, quantitative analyses can refer to differences in the magnitude of a PL domain between two individuals. For instance, external evaluators may follow the question of whether the personal understanding toward PA (as part of the cognitive PL domain) differs between person A and person B across the lifespan. In such cases, we advise the end users to limit the concerning time frame to the thematically relevant life period (individuals may differ by age). Moreover, users may compare the associative pattern across time between two individuals. In addition to descriptive patterns, researchers can compare the unstandardized regression coefficient between individuals for a PL dimension of interest. For instance, scholars may ask the question of whether the motivation for PA (element of the affective domain) has declined less strongly since retirement for person A than for person B ( $b_A < b_B$ ). At this point, however, we argue against using the BMAP-PL in practice to confront individuals with their PL values in comparison to other individuals or any social norms (in particular, for maximizing contrast or showcasing deficiency). Previous studies have already pointed to common pitfalls of PL assessments and the proposed method



**Figure 3.** Associative patterns of intraindividual comparisons between relevant dimensions: (a) parallel associative pattern; (b) positively associated pattern; (c) unassociated pattern; (d) opposing pattern.

Note: These are hypothetical scenarios.

should not be implemented to directly or indirectly promote ego or performance (rather than a task or mastery) orientations (Biddle et al., 2003).

Finally, if the inter-individual level is extended beyond a constellation of two persons, we identify a potential in examining PL patterns on a more generalizable level. Researchers or policymakers may be interested in the question of how motivation for PA (element of the affective PL domain) or the sense of belonging (element of a social PL domain) develops for a *group* or *population*. Unfortunately, large-scale assessments on PL as well as lifespan analyses for individual requirements of active lifestyles, in general, are largely missing (Carl et al., 2023a; Elsborg et al., 2024). We aim to critically reflect that group and population analyses, as is in inter-individual analyses, tend to dissolve the rich narratives at the individual level with potential to weaken the ideological core of PL. Such knowledge would be essential for running tailored interventions in PA and public health.

### From assessment to intervention

The BMAP-PL requires the participants to deeply reflect on their PL journey. When compared to existing PL assessments (Barnett et al., 2023; Boldovskaia et al., 2023), the present method – as the name already implicates – likely characterizes a stronger reconstruction of personal experiences with PA across all personally relevant settings (e.g. at school, in organized sport, in everyday activities, in health care). Previous methods determine knowledge relevant to comprehend PA, portray externally defined situations in interaction with PA, include external standards, or assess general motor skills. In this regard, the proposed BMAP-PL directly starts with the experiences of the individual, who can verbalize life events, and prioritize key experiences. This combination better aligns with the person-centered nature of the concept (Brown et al., 2020). The reflection may be so profound that the participant may recall important biographical moments (this may even involve negatively affected events), discover new personal interrelations (i.e. stimulated by the self-generated courses), and recognize enlightening events pertaining to PA. Against this background, the charting task with personalized insights may already be considered as *the* intervention. The BMAP-PL method has the potential to close the gap between assessment and intervention.

After the completion of the descriptive part of the mapping, we recommend the facilitator to not directly dissolve the biographical situation but to utilize the acquired authenticity for an explicit interventional follow-up (see step d: final overview and conclusion). The facilitator can let the interviewee imagine a 'hoped-for' course by plotting PL trajectories beyond the current time point. Systematic reviews on prospective *imagery* as an interventional approach have shown positive effects on a range of outcomes in the PA and health context (Conroy & Hagger, 2018; Ely et al., 2020), and the visualization of an extended course could serve as graphical representation of the embodied 'ideal self'. Similarly, the tandem could also derive PA *intentions* for the future. Psychological research has yielded a large evidence base on the effectiveness of intentions for improving health behaviors (Bélanger-Gravel et al., 2013), which justifies its inclusion in a range of models for changing PA behavior (Rhodes & de Bruijn, 2013). The intentions can be operationalized via goals and the facilitator should be aware of basic principles to set these (McEwan et al., 2016; Swann et al., 2023). In this context, special credit is given to approaches of motivational interviewing, which are supported by a review and meta-analysis in the PA context (Nuss et al., 2021). By avoiding that aspired states are imposed externally, the atmosphere ensures that the participant of the BMAP-PL himself identifies worthwhile PL goals and builds an intrinsic commitment to these (Fuchs et al., 2017). The facilitator can apply an *identity-reinforcing climate* that clearly endorses the biography of the individual. Accordingly, the facilitator should work out the PA strengths with the participant, which can, in turn, foster the *confidence* of preferred PA (as one important facet of PL: Edwards et al., 2017). If individuals are not fully aware of their favorite activities yet, the facilitator should extend these biographical reflections to successively work out the individual preferences nourishing 'motivational competence' for exercise (Schorno et al., 2022). As a further facet, the interview could also redirect the attention to the social PL factors by asking whether the current activities are embedded into *activity-friendly environments* (Panter et al., 2017). If the participant recognizes space for improvement, the tandem could develop scenarios and suggestions to improve the person-environment fit (Giles et al., 2021). In general, the facilitator should carefully consider whether challenging questions emphasize a productive moment or whether these jeopardize the identity of the individual. There is no doubt that such a person-centered intervention requires substantial empathic, organizational, and technical interview skills (Harding, 2006).

## Discussion

Despite providing the path on the conceptual level, previous research has not yet succeeded in establishing a charting task or assessment that inherently meets the ideographic claim of PL to account for individuals' 'unique journeys' in regard to PA for life (Cairney et al., 2019; Green et al., 2018; Rudd et al., 2020; Taplin, 2019; Young et al., 2020). The biographical situatedness, implicating the opportunity for dynamic constellations on the personal level, marks an important tenet of the phenomenological assumptions of the PL concept (Pot et al., 2018; Whitehead, 2007). In the present article, we suggest the BMAP-PL with its roots in identity research and health sociological analyses in elite sport (Schubring et al., 2019; Thiel et al., 2011) as a potential method to cover this research gap. With this conceptual suggestion, we invite all researchers and practitioners with the *formal role* or an *intrinsic interest* in accompanying individuals along their personal journey with PA to draw on the biographical mapping as an instrument to chart PL. Given the profound, self-critical reflections about the own PA identity, we qualify the flexible method as minimizing the gap between assessment and intervention.

The present article should be understood as providing the conceptual foundation as well as methodological introduction to BMAP-PL. Although the method has already been successfully employed in a range of studies in the sport, PA, and health context (Andersson & Barker-Ruchti, 2019; Barker-Ruchti et al., 2014; Diehl & Lindenthal, 2021; Schubring et al., 2019; Seiberth et al., 2022; Thiel et al., 2011; Thiel et al., 2020a; Thiel et al., 2020b), we call on future studies to investigate the specific use of this method in the PL context. A prospectively oriented research agenda may encompass the examination of: (a)

*basic technical aspects*, such as individual's experience of using the method (e.g. the level of difficulty, cognitive resources, perceived fairness), as well as quality criteria for both excellent quantitative research (e.g. construct validity, criterion validity, retest reliability, facilitator's instruction and interpretation objectivity) as well as excellent qualitative research (e.g. rich rigor, worthy topic, sincerity, credibility, or resonance; see Tracy, 2010); (b) *intra-individual phenomena*, such as a better understanding of individual narratives or the connection to certain major life events (Gropper et al., 2020); (c) *inter-individual phenomena*, such as generalized patterns across the lifespan (Varma et al., 2017); or (d) the *practical use* of the BMAP-PL, such as the enrichment of health care or learning situations. Empirical evidence can help nourish the postulated benefit of biographical mapping for the PL field.

Despite the flexibility offered for this method, we do not advocate for a 'everything goes' mentality for the BMAP-PL. Albeit not tested empirically, we would even formulate counter-indications for applying this method in the following cases. First, we would advise caution when individuals exhibited signs of nostalgic depression, manifesting in strong negative emotions when ruminating about activities in the past (Garrido, 2018). In this situation, the mapping task may adversely affect the subjectively constructed PA journey and, subsequently, maybe the *actual* experiences in the future as well. Facilitators should be cognizant of professional boundaries and should be prepared for challenging topics being raised and referring to psychological follow-up support (Risan et al., 2020). Second, the youngest population investigated in a scientific study were youth athletes (Thiel et al., 2011). According to psychological research, children as young as 10 years can exhibit significant autobiographical memory and self-concept skills relevant for engaging with complex assessments (Dreiskämper et al., 2022; Vagni et al., 2024) such as a multifaceted PL mapping. Therefore, we suggest using the BMAP-PL with individuals above 10 years. When intending to employ the method even with younger children, feasibility studies should specifically assess the opportunities and limitations of this approach with this age group first. From an atmospheric standpoint, a group constellation with several participants requires a calm and protected atmosphere. If students in the physical education context, for instance, fundamentally misconceive the individual work by distracting classmates or even disclosing confidential information, we doubt the utility of the BMAP-PL in this situation.

Concurrent to the postulated benefits, we mention the following shortcomings of the BMAP-PL, which partially relate to the paradigmatic demarcation from the established assessments of the field (Barnett et al., 2023). First, the method depends on the instruction of and interaction with the facilitator. As typical for qualitative methods, the primary focus is not on objective measurement as favoured by classical psychometric assessments. The BMAP-PL considers the facilitator as stimulating personal insights (rather than producing psychometric vagueness). Second, the BMAP-PL is strongly based on the qualification and expertise of the facilitator, which might represent a barrier against the profound and effective application of the method. Relatedly, facilitators often have a wide range of tasks as part of their roles and, therefore, might not have sufficient time to build trust and ensure in-depth exploration of all relevant PL phenomena. Third, the BMAP-PL is with the underlying lifespan perspective not able to illustrate detailed weekly or monthly changes to PA, which undermines the capacity of the method to reflect the effectiveness of a short-term intervention. Scientists and practitioners can still extract the effectiveness of longer interventions (e.g. those with a duration of a half years up to two years) when registering differential courses. The connection *with* the assessment, in contrast, was considered a strength of the proposed method. Fourth, the BMAP-PL can only capture a 'snapshot' of PL at a given time point. However, "the concept of physical literacy is fluid" (Durdin-Myers et al., 2022) and may look different when articulated on another day. In this regard, the proposed method does not map the dynamic nature of PL. It might be interesting to merge PL charting with aspects of ambulatory assessment accounting for in-person variability and developmental processes under consideration of the personal context (Hoppmann & Riediger, 2009). Fifth, the interview is an intensive, in-depth procedure that takes personal and temporal resources. Therefore, we identify a considerable effort when intending to employ the BMAP-PL on a large and representative level. In this regard, developments of artificial intelligence still have to progress in year 2024 to enable faultless and authentic assistance by technology.

## Conclusion

The BMAP-PL visualizes individual journeys in the relationship with PA by covering the breath of the construct through different PL courses. The proposed method for employment in research and practice embodies the immanent advantage that it: (a) harmonizes with important theoretical assumptions of PL (e.g. phenomenology); (b) truly unfolds the individual idiosyncratic relationship with movement; (c) acknowledges the biographical situatedness of PL and makes the individual journey visible; (d) makes charting suggestions beyond the frequently studied childhood and adolescence; (e) signalizes paradigmatic flexibility by standing open for both quantitative and qualitative analyses (and also mixed-methods endeavours); and (f) allows for an organizational combination with reflection and intervention. We strongly recommend the scientific community to surpass the conceptual level in the next step by initiating empirical research to gain insights into the feasibility of the method, explore biographical phenomena, complement existing PL insights, and enrich existing intervention approaches.

## Abbreviations

APLF = Australian Physical Literacy Framework; BMAP-PL = biographical PL mapping; PA = physical activity; PL = physical literacy.

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