

PARKOUR PRACTITIONERS' TRAINING HABITS, MOTIVES, GOALS AND PERCEIVED PERFORMANCE FACTORS: AN INTERNATIONAL APPROACH

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Abstract:

This study aimed to describe frequent parkour practitioners' training habits, training motives and goals, and perceived performance factors of practitioners from different countries and continents. An *ad hoc* questionnaire (PARK-Q) was developed in four languages by the research group and validated by active experts with 12-18 years of experience practising and coaching parkour. The PARK-Q is a multidimensional questionnaire that explores demographics, habits, goals, motivation and perceived performance factors from the practitioner's perspective. The PARK-Q presented overall great internal consistency (Cronbach's $\alpha=.902$) and was answered by one hundred and forty-one parkour practitioners (N=141, 26.2 \pm 5.0 years old) from 15 countries and four continents. Parkour could still be considered a masculine action sport with a low level of federated participation, mostly practised outdoors, with friends, in an unstructured way, and learnt freely: with friends, autodidact, etc. Parkour practitioners' motivation mainly comes from within and could be considered intrinsic motivation. To parkour practitioners, precision, environmental adaptability, and movement techniques may be considered the most important performance factors, whereas flip repertoire, suffering capacity, and keeping yourself distracted are the least important. Thus, new measuring instruments or assessments that align better with the discipline should be explored, considering the performance factors perceived by international parkour practitioners.

Keywords: *art du déplacement, freerunning, questionnaire, measuring instrument, training*

Introduction

Parkour was created in Evry and Lisses (France) in the late 1980s within the group Yamakasi (Angel, 2016; Pagnon, Faity, Maldonado, Daout, & Grosprêtre, 2022; Puddle, 2019; Sampayo & Ferreiro, 2020; Torchia, 2021). In its beginnings, it consisted of games and exercises involving

strength and agility but later developed into more complex training systems (Stagi, 2015). Years go by, and the founder group split apart due to personal circumstances. It was at this point when three disciplines with the same root emerged: parkour, Art Du Déplacement (ADD, i.e., art of movement) and freerunning (Pagnon, et al., 2022; Puddle, 2019;

Sampayo, 2020; Sampayo & Fererro, 2020). In this study, parkour will be used as an umbrella term for all expressions of the discipline except when the different disciplines are addressed independently or when quoting participants, as some authors have done in previous works (Puddle, 2019). In 2001 the practice became a global phenomenon with the release of the film *Yamakasi: Les samouraïs des temps modernes* and in 2003 with the release of the documentary *Jump London*. At this point, parkour started to develop far from the founders, and new practitioners started to shape the sport (Stagi, 2015; Torchia, 2021). Although the three disciplines (parkour, ADD, and freerunning) were non-competitive in their roots, parkour began to follow a process of sportization (O'Grady, 2012; Stagi, 2015) and in 2007 the first competition was held, organised by the brand Redbull® and named Art of Motion (Red Bull, 2021). There was a backlash from the general parkour community and competing was somewhat controversial in the early days. Years later, new leaders who did not identify with the founders emerged and formed the World Freerunning Parkour Federation (WFPF). They created the 'Ultimate Parkour Challenge' for MTV, which aired in 2009 to an audience of 3.5 million people (World Freerunning Parkour Federation, n.d.). This show potentially attracted viewers interested in competition, leading them to practice outside the founders' influence. The trend was multifactorial, and the WFPF was not the only reason behind it. Other factors, such as the rebranding under the name free-running and the use of safety mats, also played a role (WebWire, n.d.). Additionally, as some athletes and companies increased their revenue through these events, more practitioners showed interest in competition. To satisfy this demand, brands, communities and federations started to organise leagues, tournaments and a broad kind of competitive events around the world, such as: Redbull's Art of Motion (Red Bull, 2021), Origins Parkour's North American Parkour Championships (NAPC) (Origins Parkour, 2022), Air Wipp's Air Wipp Challenge (Air Wipp Academy, 2018), FISE's and International Gymnastics Federation's (FIG) speed and style competitions (FIG, 2020; FIG, 2022; FISE, 2022), and World Chase Tag (World Chase Tag, 2022).

Despite parkour's popularity in the media and the streets, scientific knowledge is relatively scarce in the performance and motivation fields. Several authors have studied specific aspects of parkour from different academic perspectives (Lawrence, 2019), giving a rather fragmentary understanding of the discipline. For example, a recent review by Pagnon et al. (2022) characterised the profile of its practitioners through an extensive, multidisciplinary literature review. Many authors have tried to assess performance within parkour but with

common physical tests, and some are not closely related to the sport. For instance, some authors (Torres Larrea & Romero Frómata, 2021) measured standing long jumps, and so did Grosprêtre and Lepers (2016) with additional tests such as vertical jumps (countermovement jump - CMJ and drop jump - DJ), squat jumps and knee extension strength. Solano et al. (2017) also measured standing long jumps, sit and reach, CMJ and 15 second continuous jump test. Overall, traceurs demonstrated similar or greater jumping skills than other high-level athletes. Dvorak et al. (2017) assessed the effect of parkour training with an incremental test in a treadmill to determine maximal oxygen uptake (VO₂max), and the Eurofit physical fitness test battery to test strength in their sample. They concluded that parkour was a good form of exercise to improve the physical health of youth. Similar to previous studies, Seyhan et al. (2019) showed that the CMJ performance of traceurs increased after 8 weeks of strength training. On the other hand, there have also been attempts to create parkour-specific performance tests. Madureira et al. (2016) used a circuit to test performance when testing the efficacy of caffeine beverages in parkour. Dvorak et al. (2018) further stepped forward and developed an obstacle course in which parkour skills were assessed. Participants performed the obstacle course while testers filled a checklist giving points if the parkour technique performed met the specifications suggested by the authors. Similarly, Strafford et al. (2022) examined what functional movement skills correlated with the time of a parkour speed run performed in an indoor facility. They suggested that the agility T-test, the standing long jump, and CMJ could form a coherent battery of tests to evaluate traceurs' physical shape. Padulo et al. (2019) suggested the specific parkour repeated sprint ability test (SPRSA). This test assesses specific parkour repeated sprint ability. The SPRSA is a 15 metre, 10 time, maximal-speed shuttle run with a 15 second recovery jogging way back. Within these 15 metres the participant has to perform several techniques in the following order: Monkey vault (also named kong vault, cat or *saut du chat*), front flip, precision and roll. Although some interesting studies analysing performance cognitive aspects, such as Grosprêtre and Gabriel's (2021), most scientific research regarding parkour is based on sociology and politics (Kuldova, 2019; Marshall, 2010; Raymen, 2019), education (Acosta-Montoro, 2015; D. T. Maldonado & Silva, 2015; Suárez & Fernández-Río, 2012), and biomechanics (Jabnoun, Borji, & Sahli, 2019; G. Maldonado, Bailly, Soueres, & Watier, 2017; G. Maldonado, Bailly, Souères, & Watier, 2019), and not sport-specific performance analysis. Furthermore, practitioners' intrinsic factors, such as demographics, training habits, motivations, and goals, may influence their performance objectives and,

consequently, the sport-specific performance analysis. Some variables, such as motivation and habits, have been studied by various authors using qualitative research methods, primarily through interviews with practitioners (Clegg & Butryn, 2012; Meokahar & Martilova, 2021; O'Grady, 2012) or via questionnaires to map dietary habits of Czech parkour competitors (Srovnal, 2024). However, comparative analysis can become cumbersome if it is not conducted within a common framework. That is why complementary studies that assess these other dimensions within the sport may be necessary to better understand the discipline.

Moreover, it has to be considered that parkour has some unique features that differentiate it from other sports disciplines. According to Saville (2008), practitioners connect closely with their environment, linking their fears to distance, texture, and form. While engaging with this connection can be risky and may lead to injury, it can also transform their emotional relationship with the space. For experienced practitioners, parkour enhances spatial awareness and allows for deeper emotional engagement with the places they explore. An analysis of motivation could shed some light on this topic. Alternatively, most sports are based on structured organisations (federations, sports licenses, competitions...), but, in reality, parkour has originally been practised in less structured and controlled contexts. This makes parkour very difficult to assess and keep track of. Thus, further research is needed and might be interesting to explore practice habits, goals, motives and perceived performance factors from the global community's perspective. Therefore, the aim of this study was to describe frequent parkour practitioners' training habits, training motives and goals and perceived performance factors in practitioners from different countries and continents.

Methods

Design

This study was split into two phases. First, a group of experts developed and revised the design and content validity of an *ad hoc* questionnaire in four languages. Then, the Practice Habits, Goals, Motives, and Perceived Performance Factors in Parkour Questionnaire (PARK-Q) was shared to gather and analyse descriptive results.

Participants

In the first phase two researchers composed *ad hoc* questionnaire. Then, three experts in parkour were chosen through purposive sampling to analyse content validity. These experts were selected regarding their experience in parkour practice (12-18 years) and teaching (7-12 years), and being active in the area as self-organised and full-time coaches. Once the content was validated, it was

translated from Spanish to English by the research team and French and Italian by native speakers and parkour practitioners. The second phase consisted of sharing the questionnaire with parkour practitioners. One hundred and forty-one parkour practitioners ($N=141$, 26.2 ± 5.0 years old) participated in this study from 15 countries and four continents (Table 1). These practitioners had experience within the sport ranging from a single year up to 23 years (8.5 ± 5.0 years). Further information is presented in Table 1. The inclusion criteria for entering this study were frequent practitioners of parkour, ADD, or freerunning as a principal or secondary practice and their willingness to participate in the study. Participation was voluntary, anonymous and followed the guidelines established in the Declaration of Helsinki (2013). Participants had the chance to withdraw while filling in the form, but the anonymousness of the answers made it impossible to withdraw from the research once the questionnaire was fully answered and sent.

Procedure

After noticing the gap in the existing literature regarding performance factors, goals and practice motives, the research group created the first version of the PARK-Q questionnaire *ad hoc*. It was later revised and subject to validation by a group of field experts in the first phase. Having revised and implemented experts' contributions, a final version was translated into English, French and Italian, adapted to Google Forms and distributed. The questionnaire was distributed online in different parkour training and debate groups hosted on various platforms such as Instagram, Facebook, Discord and WhatsApp during March and April of 2022. The results were gathered in Excel for later processing.

Measuring instrument

The PARK-Q questionnaire (appendix 1): is an *ad hoc* developed multidimensional questionnaire created to assess practice habits, goals, motives and perceived factors in parkour from the practitioner's perspective. The initial design was created in Spanish and later translated into English, French and Italian by native speakers and parkour practitioners. This procedure was for all blocks except block 2 (BRSQ questionnaire). In this case, the original questionnaire in English was used (Lonsdale, Hodge, & Rose, 2008), extrinsic motivation, and amotivation (self-determination theory; Deci & Ryan, 1985) and so was the validated version in Spanish (Moreno-Murcia, Marzo, Martínez-Galindo, & Marín, 2011).

The PARK-Q consists of four main blocks and a total of 88 items. The first block (items 01-16) aims to gather information about the practitioner's general information (language, age, gender, country

Table 1. Participants' choice for language, gender and country of residence in the Practice Habits, Goals, Motives and Perceived Performance Factors in Parkour Questionnaire (PARK-Q)

Variable	Options	n	Percentage (%)
Language	Spanish	102	72.3
	English	17	12.1
	French	12	8.5
	Italian	10	7.1
Gender	Male	127	90.1
	Female	13	9.2
	Non – binary	1	0.7
Country of residence	Australia	1	0.7
	Canada	1	0.7
	Chile	5	3.6
	Colombia	2	1.4
	Ecuador	13	9.2
	Finland	1	0.7
	France	12	8.5
	Israel	1	0.7
	Italy	11	7.8
	Japan	1	0.7
	Peru	1	0.7
	Singapore	2	1.4
	Spain	81	57.5
	United Kingdom	5	3.4
	United States of America	4	2.8

of residence and city of residence), training habits and level of expertise. As for training habits, the following items are asked: training space (indoor gyms, outdoors, parkour parks...), development and learning (freely, classes, events, tutorials, physical education...), sessions per week, whether they do conditioning and how often, the duration of their training, years they have been training, company during training, if the participant was federated and whether they compete. The final item asks participants to rank themselves according to their practice level (beginner, novice, intermediate, advanced or expert). Some of the possible answers for these questions are binary (Yes/ No) with the option to choose *N/A*, other questions are multiple-choice with an extra blank space following *Other* to fill in as the participant finds convenient, and some others are open questions where participants are asked to type their answers. Block number two consists of the standardised, 36-item Behavioural Regulation in Sport Questionnaire (BRSQ) (Lonsdale, et al., 2008) with an additional three items suggested by the group of parkour experts. This block assesses the participant's goals and motivation to practice by in a 7-point Likert scale, which ranges from *Not true at all* to *Very true*, with an additional *N/A* column. The third block aims to assess the importance of

several performance factors within parkour, some of which have been explored in previous studies and some new ones suggested by the research team or the expert group. This block has a 7-point Likert scale structure ranging from *Not important at all* to *Very important* with an additional *N/A* column. The fourth and last block is an open space for participants to express if they felt any kind of performance factor or other item was missing and worth mentioning. This block is processed from a qualitative perspective.

Statistical analysis

Results are presented as mean±standard deviation ($M \pm SD$), frequencies, and percentages. Cronbach's alpha statistic was used to describe the questionnaire's internal consistency. The analysis was conducted with the Statistical Package for Social Sciences (SPSS Inc., version 26.0 Chicago, IL, USA).

Results

PARK-Q content validity

To elaborate the PARK-Q, all experts' suggestions were considered. The qualitative assessments made by the experts are shown in Table 2.

Table 2. Experts' assessment and suggestions for the Practice Habits, Goals, Motives and Perceived Performance Factors in Parkour Questionnaire (PARK-Q)

Expert (E)	Qualitative assessment
E1	(B1P5) Something that has always been strange to me is that usually there's no choice such as <i>Parkour/ ADD/ Freerunning as the same global practice</i> . (B2) In the second part, I would also add <i>because it's the only thing it helps me socialise, because it is the only way I can exercise and because it is an environment in which I have friends</i> .
E2	(B3P21) Reading <i>Jump height (drop jump)</i> for the third time, I think it's the height you are able to jump from, but first, I thought it was the drop jump test, like RSI, a vertical jump after a little drop jump. Then, overall, the scope of perceived performance factors may be mixed because most peoples' answers probably won't be about performance and will be about unlocking challenges and, maybe, counting steps between gaps.
E3	I find it complete and I have nothing to add.

Note. ADD: art du déplacement, RSI: Reactive Strength Index

PARK-Q internal consistency

Regarding the internal consistency of the different dimensions between the two items, Cronbach's alpha values are shown in Table 3. Cronbach's alpha coefficient measures a set of survey items' internal consistency or reliability. This statistic helps determine whether a collection of items consistently measures the same characteristic. Cronbach's alpha quantifies the level of agreement on a standardised 0 to 1 scale. Higher values indicate higher agreement between items. Cronbach's alpha for the whole PARK-Q was high with an alpha of .902. All blocks followed this trend except for the

first block (general information and practice habits), which had a Cronbach's alpha of .264. On the other hand, blocks two and three had an alpha of .957 and .994, respectively. Similarly, their sub-blocks presented alphas ranging between .778 – .999.

PARK-Q descriptive results

In this section, the descriptive results of the PARK-Q questionnaire are presented. In the first block, items gather information about general aspects and participants' practice habits. As for *Which of the following is your main practice?*, the choice with most answers was *Parkour/ ADD/ Free-*

Table 3. Internal consistency (Cronbach's alpha) values for Practice Habits, Goals, Motives and Perceived Performance Factors in Parkour Questionnaire (PARK-Q)

Block	Block (B), sub-block (S) and item number (P)	Cronbach's alpha	Number of elements
Block 1: Habits	B1 (P1, P3, P5-P7, P9-P16)	.264	13
Block 2: Behavioural Regulation in Sport	B2 (P17-P55)	.957	39
Amotivation	B2S1 (P25, P34, P43, P55)	.999	4
External regulation	B2S2 (P24, P33, P42, P51)	.995	4
Identified regulation	B2S3 (P22, P31, P40, P49)	.985	4
IM to accomplish	B2S4 (P20, P29, P38, P47)	.988	4
IM general	B2S5 (P17, P26, P35, P44)	.884	4
IM to know	B2S6 (P18, P27, P36, P45)	.993	4
IM to experience stimulation	B2S7 (P19, P38, P37, P46)	.990	4
Integrated regulation	B2S8 (P21, P30, P39, P48)	.996	4
Introjected regulation	B2S9 (P23, P32, P41, P50)	.960	4
Extra items	B2S10 (P53, P54, P55)	.778	3
Block 3: Performance Factors	B3 (P56-P87)	.994	32
Explored Performance Factors	B3S1 (P74, P75, P77-P83)	.990	9
New Performance Factors	B3S2 (P56-P73, P76, P87)	.990	20
Social Performance Factors	B3S3 (P84-P86)	.957	3
Total	B1P1-B3P87	.902	84

Note. IM: intrinsic motivation.

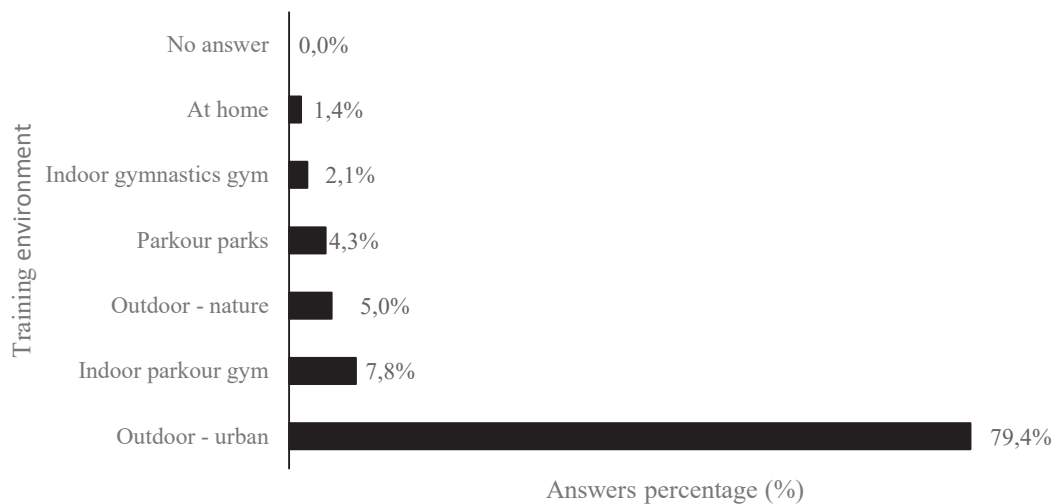


Figure 1. Training environment.

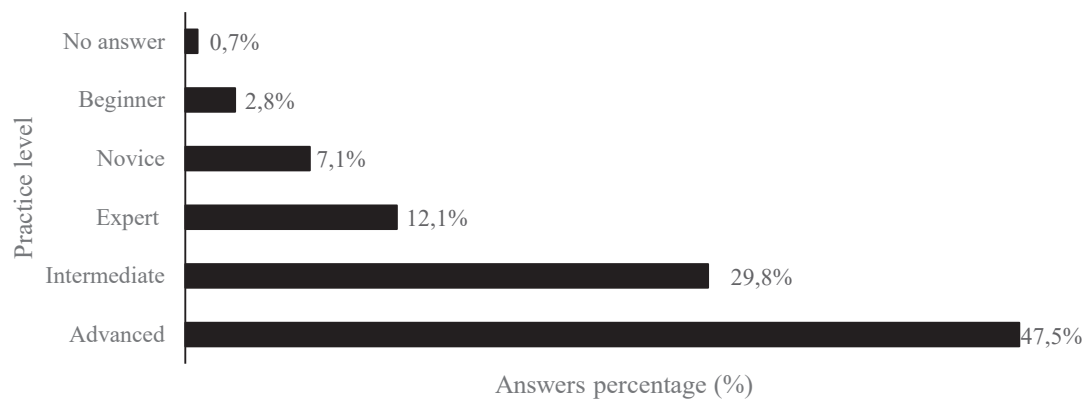


Figure 2. Participants practice level.

running as the same global practice (i.e., Parkour, ADD and Freerunning understood as the same practice, regardless of the name) with a 43.3% of the total. Following this option, Parkour obtained 35.5% of the total answers, ADD 13.5%, freerunning 2.1%, and callisthenics and fitness-related answers represented 2.1%. Last, climbing, tricking, kung fu, krav maga, and N/A represented 0.7% of the answers. There were no answers on gymnastics. The answers about the training environment are shown in Figure 1. The 79.4% stated the type of environment they usually trained in was outdoors and urban.

When the learning development within the sport was asked, 75.9% of the total picked *Freely: with friends, autodidact, etc.*, 20.6% of the participants chose *Scheduled activities: classes, workshops, events...*, and the remaining 3.6% picked *Internet: tutorials, videos, guides...* whereas nobody learnt through *Physical Education*. The results related to participants' experience and expertise level are presented in Figure 2. In this case, 47.5% identified their level as *Advanced*.

When asked whether the participant was federated, the answers were 12.8% for *Yes*, 85.8% for *No* and 1.4% for *N/A*. Regarding the average number of

sessions per week, 12.8% selected *<1 session/week*, 42.6% *1-2 sessions/week*, 30.5% *3-4 sessions/week* and 14.2% *5+ sessions/week*. Then, when asked about the duration of those sessions, 2.8% of the participants chose *<1h*, 48.9% of them *1-2h*, 38.3% picked *3-4h*, 8.5% trained *+5h* and 1.4% selected *N/A*. When asked, *Do you programme or schedule your training?* 48.2% said *Yes*, 48.9% said *No*, and the remaining 2.8% picked *N/A*. As regards being accompanied during training, 18.4% of the participants claimed to train *Alone*, 71.6% *With friends*, and the remaining 9.9% trained *In classes*. Finally, participants were asked about how often they did conditioning. 8.5% said *Never*, 15.6% of all participants stated they did conditioning *<1 sessions/week*, 38.3% said *1-2 sessions/week*, 24.8% chose *3-4 sessions/week*, 9.9% of all participants chose *5+ sessions/week* and 2.8% selected *N/A*. As for competition, 87.2% of all participants said they did not participate in parkour competitions. The results are shown in Figure 3:

Table 4 presents the results for the second block, which assessed the participant's goals and motivation to practice.

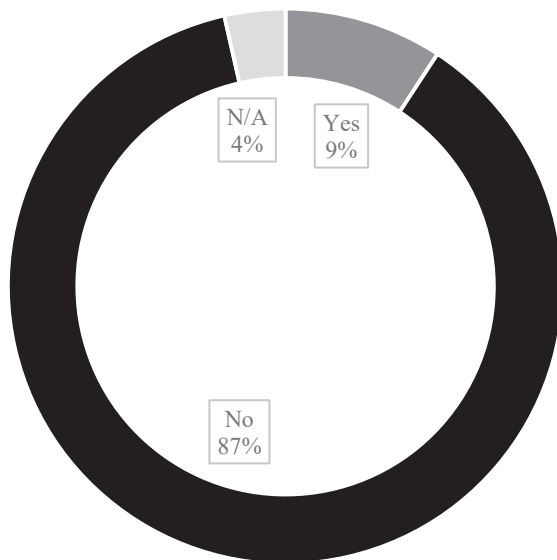


Figure 3. Participation in parkour competitions in percentage (%).

The third block in the PARK-Q questionnaire addresses different performance factors that can be split into three groups: factors used in previous studies, factors often involved in habitual training, and factors less connected with performance or social performance factors. These results are presented in Tables 5, 6, and 7, respectively. As regards factors that have been explored beforehand, they are presented in Table 5. Notably, the factor with the highest percentage at the *Very important* level, with 44.7%, was jump power.

As for the factors often involved in usual training, the highest percentage at the *Very important* level was speed, with 69.5%. All other results are shown in Table 6:

Last, results regarding factors less connected to performance during training are presented in Table 7, in which *Collaboration/ cooperation/ altruism* can be highlighted. It is the factor with the highest percentage in the *Very important* level among the three, with 40.4%.

The 4th block and last part of the PARK-Q questionnaire was an open question on performance factors or other aspects that participants felt were missing in PARK-Q. Although 62% left this space blank, most answers were connected to psychology. To the question *Are there any other factors you consider important that have not been mentioned before?*, a participant stated *Psychological factors or factors related to emotional intelligence, such as identifying frustration or blocking feelings, and being able to determine their cause*. Another participant pointed out *Mental strength (not only when breaking a jump, but also as a skill to concentrate, proprioception and body auto control)*. Also linked to psychology, some participants mentioned *Jump visualisation and mental preparation* or philosophy.

A participant stated it was essential to consider concentration and mental agility as performance factors. That mental agility concept could be also linked to the answer of another participant who mentioned *reaction time in unexpected situations*. Following psychology, another subgroup could gather responses addressing emotions. A participant mentioned *emotional balance* without further elaboration. In contrast, others considered important *The empathy an individual strengthens in each group training and individual training, motivation, and Motivation, concentration, the use of the senses as the sight, coping with injuries, and remaining constant; to be and to last*.

The often repeated mantra amongst the parkour community, *Être et Durer* (to be and to last), was also part of another answer in this space, but this time linked to health. This participant pointed out *Health. Postural hygiene, abstaining from doing thing one is not physically capable of. To be and to last*. Health has also been addressed in other comments, such as *Prioritising safety and integrity. Continue practising until an old age. Therefore, it is important to take care of yourself*. Connected to taking care of oneself, a participant commented, *I consider fundamental the capacity of coping with and overcoming injuries, as it's a determinant factor in the practice's continuity*.

Another subgroup could be training or factors linked to it. On the one hand, some participants mentioned physical skills such as *Elasticity and proprioception, flexibility, coordination, adaptability, and gymnastics training*. Somebody elaborated, *Heredity plays an important role. It's true you can get better with more training, but I think you need a basic physical form to have a chance to improve*. A participant considered remarkable *Body to body combat, it's a basic in natural method*.

Two other participants agreed on training alone: *For example, how much you consider training alone, or whether you think it can be positive and help you progress and unlock challenges and Practicing alone is fundamental and necessary sometimes to know yourself better, as which are the limits you put to yourself without external influence. Teamwork is important, too; one of the things I like the most about the practice is sharing and helping one another. I see including this information as very positive and beneficial because it keeps our feet on the ground*.

Two participants agreed on creativity and the relationship with the environment. As one said, *Creativity development, visualising techniques in different architecture, for instance. Or knowing how the environment interacts with you with surfaces and friction forces*. The other participant mentioned, *It is important to me to learn the geography and feel the textures of my environment*. Probably linked to the environment concept,

Table 4. Participants' answers (% and $M \pm SD$) regarding practice motives and goals in the Practice Habits, Goals, Motives and Perceived Performance Factors in Parkour Questionnaire (PARK-Q)

Item - Question	Not true at all	Untrue	Somewhat untrue	Neutral	Somewhat true	True	Very true	N/A	$M \pm SD$
17-Because I enjoy it.	2.1	2.8	1.4	0.0	0.7	8.5	84.4	0.0	6.6 \pm 1.28
18-For the pleasure it gives me to know more about my sport	3.5	5.0	1.4	6.4	12.8	24.8	48.2	0.0	5.9 \pm 1.53
19-Because I love the extreme highs that I feel during sport.	4.3	2.1	2.8	6.4	14.9	22.7	44.0	0.0	5.7 \pm 1.69
20-Because I enjoy the feeling of achievement when trying to reach long-term goals.	2.8	1.4	2.1	6.4	9.2	24.1	53.2	0.0	6.0 \pm 1.46
21-Because it's a part of who I am.	2.8	2.8	2.1	7.1	10.6	16.3	58.2	1.4	6.1 \pm 1.47
22-Because the benefits of sport are important to me.	4.3	18.4	1.4	2.8	19.9	24.1	44.0	0.7	5.8 \pm 1.55
23-Because I would feel ashamed if I quit.	35.5	16.3	9.9	12.8	10.6	5.0	7.8	0.0	2.9 \pm 1.97
24-Because if I don't other people will not be pleased with me.	69.5	14.9	5.0	5.0	1.4	0.7	2.1	0.0	1.6 \pm 1.26
25-But I wonder what the point is.	68.8	4.3	2.8	4.3	2.8	1.4	3.5	1.4	1.7 \pm 1.66
26-Because I like it.	2.1	4.3	1.4	0.7	5.0	7.1	71.6	7.8	6.4 \pm 1.49
27-Because I like learning how to apply new techniques.	2.8	3.5	0.7	1.4	7.8	19.1	59.6	4.3	6.2 \pm 1.52
28-Because of the excitement I feel when I am really involved in the activity.	2.1	2.8	1.4	4.3	7.1	21.3	57.4	2.8	6.1 \pm 1.46
29-Because I enjoy the feeling of success when I am working towards achieving something important.	3.5	3.5	2.1	2.8	13.5	24.8	48.2	2.1	5.9 \pm 1.54
30-Because what I do in sport is an expression of who I am.	4.3	4.3	2.1	10.6	5.7	17.0	52.5	4.3	5.8 \pm 1.74
31-Because it teaches me self-discipline.	3.5	19.1	2.1	6.4	19.1	20.6	41.1	2.8	5.7 \pm 1.64
32-Because I would feel guilty if I quit.	36.2	10.6	2.8	11.3	7.8	8.5	14.2	0.0	3.2 \pm 2.26
33-Because people push me to participate.	75.2	12.8	4.3	3.5	2.8	0.7	2.1	0.7	1.6 \pm 1.40
34-But I question why I continue.	63.1	2.8	9.2	4.3	5.7	2.1	2.8	0.0	1.9 \pm 1.57
35-Because it's fun.	2.1	4.3	2.1	1.4	2.1	13.5	69.5	6.4	6.4 \pm 1.41
36-Because I enjoy learning something new about my sport.	2.1	3.5	2.1	3.5	7.1	20.6	54.6	5.7	6.1 \pm 1.54
37-Because of the pleasure I experience when I feel completely absorbed in my sport.	2.1	2.1	2.8	5.0	7.1	18.4	58.9	2.1	6.1 \pm 1.52
38-Because I enjoy doing something to the best of my ability.	2.1	2.8	2.1	2.1	10.6	16.3	60.3	4.3	6.2 \pm 1.40
39-Because it's an opportunity to just be who I am.	3.5	4.3	1.4	4.3	7.1	17.7	57.4	5.7	6.1 \pm 1.58
40-Because I value the benefits of my sport.	2.8	20.6	1.4	0.7	7.1	21.3	56.0	6.4	6.1 \pm 1.55
41-Because I feel obligated to continue.	61.7	16.3	2.1	4.3	3.5	2.1	5.7	0.0	2.0 \pm 1.70
42-Because I feel pressure from other people to play.	60.3	14.9	4.3	4.3	6.4	2.1	5.0	1.4	2.1 \pm 1.87
43-But the reasons why are not clear to me anymore.	67.4	2.8	5.0	4.3	2.1	1.4	4.3	0.7	1.8 \pm 1.62
44-Because I find it pleasurable.	2.8	5.7	2.1	0.7	7.8	15.6	61.0	7.1	6.2 \pm 1.50
45-Because I enjoy learning new techniques.	2.1	3.5	0.7	1.4	8.5	19.1	56.0	6.4	6.1 \pm 1.56
46-Because of the positive feelings that I experience while playing my sport.	2.1	2.8	0.7	1.4	6.4	19.1	61.7	5.0	6.3 \pm 1.41
47-Because I get a sense of accomplishment when I strive to achieve my goals.	2.8	3.5	1.4	0.0	5.0	14.9	68.1	5.0	6.4 \pm 1.43
48-Because it allows me to live in a way that is true to my values.	4.3	7.1	0.0	2.1	10.6	16.3	57.4	5.7	6.1 \pm 1.62
49-Because it is a good way to learn things which could be useful to me in my life.	2.8	17.7	2.1	3.5	11.3	17.0	50.4	5.7	5.8 \pm 1.74
50-Because I would feel like a failure if I quit.	56.0	12.1	5.0	5.0	3.5	4.3	5.7	2.8	2.2 \pm 2.04
51-In order to satisfy people who want me to participate.	75.9	16.3	3.5	2.1	0.7	0.7	3.5	1.4	1.5 \pm 1.53
52-But I question why I am putting myself through this.	66.0	12.1	5.0	5.0	1.4	1.4	3.5	1.4	1.8 \pm 1.63
53-Because it is the only thing it helps me socialise.	57.4	17.0	9.2	4.3	7.8	3.5	5.0	0.7	2.2 \pm 1.89
54-Because it is the only way I can exercise.	49.6	6.4	9.2	5.0	9.2	2.1	5.7	2.1	2.3 \pm 1.99
55-Because it is an environment in which I have friends.	17.7	2.8	9.9	6.4	14.2	15.6	27.7	2.1	4.5 \pm 2.28

Table 5. Participants' answers (% and $M \pm SD$) for previously used performance factors in the Practice Habits, Goals, Motives and Perceived Performance Factors in Parkour Questionnaire (PARK-Q)

Item - Factor	Totally unimportant	Unimportant	Slightly unimportant	Neutral	Slightly important	Important	Very important	N/A	$M \pm SD$
74-Horizontal jump distance	0.7	0.7	2.8	9.9	12.8	36.2	35.5	1.4	6.16 \pm 1.19
75-Jump power	0.7	0.7	0.7	5.7	16.3	29.8	44.7	1.4	5.84 \pm 1.11
77-Drop Jump (DJ)	1.4	2.1	2.1	12.1	24.8	22.0	29.1	6.4	6.62 \pm 0.74
78-Vertical jump height (CMJ)	0.7	1.4	1.4	12.8	18.4	30.5	33.3	1.4	4.97 \pm 1.71
79-Repeated Sprint ability	2.1	5.0	2.1	12.8	24.1	22.7	28.4	2.8	6.34 \pm 0.98
80-Running jump distance	1.4	1.4	0.7	9.9	17.0	34.0	32.6	2.8	6.57 \pm 0.81
81-Core stability	0.7	0.0	2.8	6.4	16.3	36.9	34.8	2.1	6.38 \pm 1.01
82-Grip strength	0.7	0.0	2.1	6.4	14.2	35.5	37.6	3.5	5.72 \pm 1.52
83-Maximal oxygen uptake ($VO_{2\max}$)	5.0	2.1	5.7	17.0	15.6	24.1	25.5	5.0	5.65 \pm 1.36

Table 6. Participants' answers (% and $M \pm SD$) for suggested performance factors in the Practice Habits, Goals, Motives and Perceived Performance Factors in Parkour Questionnaire (PARK-Q)

Item - Factor	Totally unimportant	Unimportant	Slightly unimportant	Neutral	Slightly important	Important	Very important	N/A	$M \pm SD$
56-Balance	1.4	0.0	2.8	5.0	9.2	30.5	50.4	0.7	6.49 \pm 0.89
57-Speed	0.7	0.7	1.4	7.1	23.4	34.8	31.9	0.0	5.80 \pm 1.40
58-Precision	0.7	0.0	0.0	1.4	0.7	27.7	69.5	0.0	6.14 \pm 1.18
59-Suffering capacity	4.3	5.0	9.2	19.1	18.4	19.9	23.4	0.7	5.41 \pm 1.68
60-Perseverance	0.7	0.7	0.7	1.4	10.6	29.8	56.0	0.0	5.86 \pm 1.37
61-Environmental adaptability	0.7	0.0	0.7	0.0	5.7	24.8	68.1	0.0	4.44 \pm 2.00
62-Commitment	0.7	0.7	0.7	2.8	8.5	25.5	61.0	0.0	6.42 \pm 0.96
63-Breaking a jump	4.3	0.0	2.8	9.2	19.1	22.7	39.7	2.1	6.01 \pm 1.24
64-Cardiovascular resistance	1.4	0.7	3.5	14.2	19.1	26.2	33.3	1.4	5.01 \pm 1.78
65-Movement techniques	0.7	0.0	0.0	2.1	6.4	25.5	61.7	3.5	5.88 \pm 1.22
66-Bilateralism	1.4	1.4	2.8	10.6	16.3	24.1	39.7	3.5	6.09 \pm 1.12
67-Creativity	1.4	0.0	2.8	3.5	12.1	30.5	48.2	1.4	5.68 \pm 1.44
68-Movement. acrobatic or route aesthetics	4.3	3.5	5.7	10.6	16.3	26.2	31.9	1.4	5.55 \pm 1.45
69-Parkour movement repertoire	1.4	1.4	2.8	9.9	14.2	26.2	41.8	2.1	5.76 \pm 1.26
70-Flip repertoire	13.5	7.8	8.5	14.2	19.1	19.9	16.3	0.7	5.40 \pm 1.55
71-Flow	0.7	0.0	1.4	1.4	7.1	28.4	58.2	2.8	5.80 \pm 1.28
72-Relative strength - Bodyweight strength	1.4	0.7	2.1	5.7	14.9	30.5	43.3	1.4	5.93 \pm 1.14
73-Absolute strength - Against weight strength	7.1	3.5	8.5	12.1	24.1	19.1	24.8	0.7	6.01 \pm 1.13
76-Jump height (saut du fond)	2.8	1.4	3.5	8.5	20.6	27.0	36.2	0.0	5.22 \pm 1.73
87-Distance after a movement (Eg. Catpass pre)	2.8	1.4	5.0	12.1	14.9	24.8	37.6	1.4	5.29 \pm 1.60

Table 7. Participants' answers (% and $M \pm SD$) for factors less connected with performance in the Practice Habits, Goals, Motives and Perceived Performance Factors in Parkour Questionnaire (PARK-Q)

Item - Factor	Totally unimportant	Unimportant	Slightly unimportant	Neutral	Slightly important	Important	Very important	N/A	$M \pm SD$
84-Socialising	3.5	2.8	6.4	15.6	18.4	24.8	27.7	0.7	4.98 \pm 1.87
85-Keep yourself distracted	6.4	5.7	7.8	15.6	15.6	20.6	25.5	2.8	5.80 \pm 1.43
86-Collaboration/ cooperation/ altruism	2.1	1.4	2.8	9.9	14.9	26.2	40.4	2.1	5.63 \pm 1.53

another participant pointed out the weather as an important performance factor.

Other participants commented on transmitting the discipline and its applicability to day-to-day life and community. Someone pointed out *social support* as an important factor, others addressed values *I think you could talk more about the benefits and values we get and develop through the sport, and I'd say knowledge transmission and maturity to apply it in my everyday life*. Linked to transmission, there was an answer about coaching: *Coaching, or doing Parkour because it is part of your profession. Responsibility to others to continue training/ coaching*.

Lastly, some answers cannot be classified under any topic. These comments mentioned *critical thinking, no competition parkour is not competing against others; you don't have to measure or compare to others; you have to see what you are and take that into consideration, improve*, another participant expressed *the sensation of freedom and success, resilience Getting up after failure and staying decent, nutrition A question to ask whether someone thinks you need energy drinks or sports foods for your training*; and a final answer that wrapped some of the previous points with need ideas *Breathing, nutrition, injury prevention, hydration, sleep importance, intuition development, environment adaptability, creativity and identity*.

Discussion and conclusion

Although there are previous studies that explored physical condition in parkour (Daneshjoo & Raeisi, 2020; Dvořák, et al., 2018; Grosprêtre & Lepers, 2016; Grosprêtre, Ufland, & Jecker, 2018; Marchetti, et al., 2012; Padulo, et al., 2019; Pagnon, et al., 2022; Seyhan, 2019), this is the first time that research is conducted to study parkour practitioners' training habits, training motives and goals, and performance factors perceived by frequent practitioners from different countries and continents. The main finding regarding habits was that 43.3% of all participants did not make distinctions between names and claimed they practised 'Parkour/ADD/ Freerunning' as the same global practice, 79.4%

trained outdoors in an urban environment, 75.9% learned parkour *Freely: with friends, autodidact, etc.*, the 47.5% considered themselves as *Advanced*, and 87.2% did not participate in parkour competitions. As regards motivation, on one hand, 84.4% found *Very true* to practice *because I enjoy it*, 69.5% *because it's fun*, and 68.1% *because I get a sense of accomplishment when I strive to achieve my goals*. On the other hand, 75.9% of the participants felt it was *Not true at all* that they practice *In order to satisfy people who want me to participate*, 75.2% found the statement *because people push me to participate* to be *Not true at all* and 69.5% of participants picked that same choice for the phrase *Because if I don't other people will not be pleased with me*. Regarding performance factors, the options that most participants found *Very important* were *Precision* with 69.5%, *Environment adaptability* with 68.1% and *Movement techniques* with 61.7%. The factors most participants considered *Totally unimportant* were *Flip repertoire* with 13.5%, *Absolute strength* with 7.1% and *Keep yourself distracted* with 6.4%. The results obtained in the present study provide relevant information for a better understanding of this discipline.

Internal consistency

In disciplines or sports with scarce research, it is essential to develop valid measuring instruments that allow researchers to further study the subject rigorously. The PARK-Q followed a similar development as other questionnaires (Lonsdale, et al., 2008; Moreno-Murcia, et al., 2011), created *ad hoc* and previously validated before sharing it with practitioners because there were no previous surveys developed to explore habits, motives and/or performance factors in parkour. The PARK-Q was shared among a group of experts to assess its validity, and probably due to researchers' experience in the topic, the suggestions made by the expert group were few. Overall internal consistency for the 88 items of the questionnaire was great ($\alpha=.902$), and other consistency results were superior to others found in similar questionnaires where Cronbach's $\alpha \geq .70$ (Alexe, et al., 2022; Farmanbar, Niknami, Hidarnia, &

Lubans, 2011). Cronbach's alpha for the *Habits* block (P1-P16) was considerably low ($\alpha=.264$). Nevertheless, this result may show low internal consistency because items regarding country, environment, training frequency, years of practice, etc., could mean the sample for this study was very diverse. Comparing the PARK-Q's block (P17-P55), which includes the BRSQ, to other studies using the same questionnaire, important differences can be pointed out in each sub-block regarding internal consistency. In this study Cronbach's alpha for *Amotivation* was .999, while in other studies these values were lower ($\alpha=.66-.86$) for the same block (Farmanbar, et al., 2011; Guedes, Caus, & Sofiati, 2019; Monteiro, Moutao, & Cid, 2018; Moreno-Murcia, et al., 2011; Tsitskari, Vernadakis, Foridou, & Bebetos, 2015). Cronbach's alpha for *External Regulation* resulted in .995 in the PARK-Q, while other authors ranged $\alpha=.63-.90$ (Alexe, et al., 2022; Farmanbar et al., 2011; Guedes, et al., 2019; Monteiro et al., 2018; Moreno-Murcia, et al., 2011; Tsitskari, et al., 2015). *Identified regulation* ($\alpha=.985$) had a higher α value compared to the previous authors, too ($\alpha=.68-.93$) (Farmanbar, et al., 2011; Guedes, et al., 2019; Monteiro, et al., 2018; Moreno-Murcia, et al., 2011; Tsitskari, et al., 2015). The tendency remains similar to the sub-block *IM to accomplish* ($\alpha=.988$), where other authors scored a lower alpha ($\alpha=.79-.80$) (Guedes, et al., 2019; Moreno-Murcia, et al., 2011). The rest of the authors did not present results for this sub-block. Cronbach's alpha for *IM general* in the PARK-Q was .884, similar to Tsitskari et al. (2015) ($\alpha=.85$) and Pinto et al. ($\alpha=.82$) (Guedes, et al., 2019), but higher than Moreno et al's ($\alpha=.75$) (Moreno-Murcia, et al., 2011). Within the same authors, *IM to know* had an internal consistency ranging from .78-.85, whereas the PARK-Q scored an alpha of .993. As regards to *IM to experience stimulation* sub-block, Cronbach's alpha for PARK-Q was .990, close to Tsitskari et al.'s ($\alpha=.92$) (Tsitskari, et al., 2015) and higher than in Moreno's study ($\alpha=.78$) (Moreno-Murcia, et al., 2011) and Pinto's research ($\alpha=.83$) (Guedes et al., 2019). *Integrated regulation* sub-block internal consistency was $\alpha=.996$, while previously mentioned authors' ranged .71-.93 (Alexe, et al., 2022; Farmanbar, et al., 2011; Guedes, et al., 2019; Monteiro, et al., 2018; Moreno-Murcia, et al., 2011; Tsitskari, et al., 2015). The last block to compare, *Introjected regulation*, followed the trend from the previous motivation forms and with an alpha of .960 outscored other authors', ranging .74-.86 (Alexe, et al., 2022; Farmanbar, et al., 2011; Guedes, et al., 2019; Moreno-Murcia, et al., 2011; Rodrigues, Macedo, Teixeira, Cid, & Monteiro, 2020; Tsitskari, et al., 2015). Finally, the new sub-block with extra items scored $\alpha=.778$, although lower than the rest, showing good internal consistency. The performance factors block showed a great consistency overall ($\alpha=.994$) and was divided into

three sub-blocks: *Explored performance factors* ($\alpha=.990$), *New performance factors* ($\alpha=.990$) and *Social performance factors* ($\alpha=.957$). These results show that the whole structure of the PARK-Q was adequate.

Demographics

Exploring demographics gathered in the PARK-Q, the results share great similarities with previous research: 90.1% of the practitioners who answered the PARK-Q were male, 9.2% were female, and the remaining 0.7% were non-binary. These numbers go along with the review by Pagnon et al. (2022), where it is mentioned that the percentage of men taking part in parkour studies represents 87-96% of the sample, and this gap was the strongest between age 15-24 years. A study by Grosprêtre and Khattabi (2022) also found a gap between parkour-practising men (78.3%) and women (21.7%). Interestingly, a study in Denmark (Engell, Larsen, & Elmoose-Østerlund, 2023) showed a narrower gender gap than previous studies, reporting that 17.3 to 21.4% of parkour practitioners were women and 78.6 to 82.7% were men, with the lower percentages representing those who practiced at least once in the past 12 months and the higher percentages reflecting weekly or more frequent practice. As Stagi (2015) mentioned, these results can be expected because parkour could be considered a masculine sport, connected with being risky and practised in public spaces. Addressing minorities within the New Zealand parkour community, Puddle (2019) also identified a barrier in women's practice: *A lack of formal hierarchies does not mean that all social groups in parkour are accessible. There are still informal hierarchies in the parkour community where male bodies dominate, even while attempts are made to promote and encourage women's participation.* These statements are supported by other authors who explored gender in parkour, too, such as Carbo-González (2013), Kidder (2013) and Wheaton (2016). An analysis by Lawrence (2019) concluded that football's extensive history, institutionalised over more than a century, has solidified the social and cultural capital primarily afforded to white men. In contrast, parkour emerged in a socio-historical context distinct from traditional sports, which are now striving to adapt to the conditions of late modernity rather than originating from it. In comparison to other action sports, females and non-binary represented a minority in skateboarding (10.7%) (Rodríguez-Rivadulla, Saavedra-García, & Arriaza-Loureda, 2020), snowboarding (47.57%) (Ronconi, 2015), snowboarding and skiing (17.6%) (De Roulet, et al., 2017) and base jumping (13.2%) (Mei-Dan, Carmont, & Monasterio, 2012). It has to be taken into account that Ronconi's study (2015) aimed to explore gender differences, which might be why females had greater representation than in

Roulet's sample. On the other hand, compared to Fari et al.'s study on rhythmic and artistic gymnastics, the results were the complete opposite, with a female participation of 98.7% (Fari, et al., 2021). When asked about their primary practice, the majority (43.3%) answered: *Parkour/ ADD/ Free-running as the same global practice*. This result reflects Puddle's terminology conflict within the community (2019).

Federative practice and space

In the PARK-Q, participants were asked whether they were federated, and the main answer was No, with 85.8% of the total. Although parkour has been absorbed as a new gymnastic discipline by the Fédération Internationale de Gymnastique (FIG, 2020, 2022; Santandreu Sosa, 2022), and some practitioners may have competed in their format, it is surprising to see such a low percentage, despite FIG's interest to federate parkour. A hypothesis for this result could be that the communication channels used to spread the PARK-Q are not used by practitioners enrolled in the FIG, or the massive criticism of FIG inside parkour communities (Elizondo-Donado & Jauregi, 2021; Santandreu Sosa, 2022). Moreover, although there has been a recent formation of national and international federations, such as Plataforma Española de Parkour y Arte del Desplazamiento (i.e., Spanish Parkour and ADD Platform; PEPADD), Parkour Singapore, Parkour and Freerunning Malagasy Federation, or Parkour Earth (Parkour Earth, n.d.), this increase does not align with the number of people who declared being federated. Furthermore, assessing the training environment for parkour, a great percentage (79.4%) claimed to practice outdoors in urban spaces, followed by indoor parkour gyms (7.8%) and outdoors in nature (5.0%). Overall, parkour focuses on adaptability to new environments, which might lead practitioners to seek different spaces outdoors in urban environments. It is also worth noting that parkour was originally founded as an outdoor activity in urban environments, and practitioners may feel firmly attached to this concept. Grosprêtre and Khattabi's (2022) results align with PARK-Q's findings, as in their study 32.2% reported practising parkour only outdoors and 2.2% only indoors in parkour facilities. These results could be linked to Pagnon et al.'s statement (2022) regarding parkour environments: Parkour is usually multi-site, practitioners train in a multitude of spots, i.e., places with interesting features for parkour (walls, trees, rails, benches, etc.). Nonetheless, these authors also mentioned that indoor parkour gyms and parkour parks have been built recently as a process of indoorization of outdoor sports as a trend that has been observed in other lifestyle outdoor practices (van Bottenburg &

Salome, 2010; Wheaton, 2004). This could explain indoor parkour gyms as the second option with the highest percentage.

Learning and training company

Regarding learning and development within the discipline, in the PARK-Q, 75.9% of the participants claimed their learning and development was *Freely: with friends, autodidact, etc.* This result aligns with Pagnon et al.'s statement (2022): *Learning takes place as a process of trial and error more than via verbal instructions. But it is also a collaborative process with limited amounts of traditional coaching, where traceurs learn by observation and comparison, mentoring and peer coaching, and frequently give feedback to each other, whether they are veterans or beginners, skilled or less so.* Grosprêtre and Khattabi (2022) found that 40.6% of the practitioners started parkour independently without supervision, whereas 20% reported beginning under the supervision of experienced practitioners and 35.6% under the supervision of a professional coach. Assessing training company, most of the answers (71.6%) for PARK-Q were *With friends*. These results follow Stagi's (2015) findings, in which some participants claimed they never trained alone because it is difficult and certain places are dangerous. It seems that group training has been since the early days in the Yamakasi (Torchia, 2021), even though parkour can be considered an individual sport (Fonseca Díaz & Palacios Peña, 2021). Torchia (2021) also mentioned that *for one of the founders, David Belle, as his training progressed, he created a core group who followed him in his training, moving his practice from an individualistic to a more shared endeavour.* So did Pagnon et al. (2022) mention in their review *Collective and individual elements are welded together: even when practitioners attempt together the same challenge, they leave space for individual interpretation, style and standards.* These behaviours can be better understood when analysed and compared to O'Grady's (2012) work. Parkour training typically develops through peer interaction in public spaces rather than formal settings, fostering a shared repertoire of moves and embodied knowledge. It exemplifies collaborative, social learning where participants support one another, provide feedback, and value contributions regardless of experience. Situated in real-world environments, parkour aligns with social learning theory (Wenger, 1998), emphasising learning through doing, belonging, and becoming. With the sport's ongoing formalisation, informal peer-led sessions contrast with structured physical education programmes. Online platforms like YouTube and social media enhance this networked learning by helping practitioners set goals and exchange knowledge.

Training habits

In addition, exploring training frequency, the most answers for the PARK-Q were *1-2 sessions/week* at 42.6% and *3-4 sessions/week* at 30.5%. Although Pagnon et al. (2022) gathered some training frequencies from other studies in their review, those cannot be compared to current data as they were inclusion criteria and lacked a number for frequency or percentage of the participants. According to Grosprêtre and Khattabi's (2022) findings, training frequency varied from 1 to 7 sessions/week, averaging 2.42 parkour sessions/week. PARK-Q's results are similar compared to skateboarding, with 3.3 ± 1.7 sessions/week (Rodríguez-Rivadulla, et al., 2020) but inferior compared to gymnastics (Fari, et al., 2021), which averages 4.1 ± 1.3 sessions/week ranging 2-8 sessions/week. Regarding the duration of those sessions, an important part was between *1-2 h* (48.9%) and *3-4 h* (38.3%) of the participants in the PARK-Q. These results cannot be compared to previous data. Nevertheless, compared to skateboarding, parkour training's duration was similar, as skateboarding averages 3.3 ± 1.5 h (Rodríguez-Rivadulla, et al., 2020), but compared to gymnastics parkour was outscored, as gymnasts trained a weekly average of 25-30 h and up to 40 h per week (Fari, et al., 2021). Continuing with items connected to training, PARK-Q's answers for structured training were 48.2%. This result goes along with previous information Pagnon et al. (2022) suggested, when they compared performance between parkour practitioners and other sports practitioners, *despite a less controlled and structured training, traceurs could achieve similar or even better performances than other athletes* meaning that with fewer years of practice and less structured training traceurs achieved similar or higher countermovement jump (CMJ) and longer standing long jump (SLJ) values as other athletes. Compared to other sports, Rodríguez-Rivadulla (2020) claimed that *Like younger skateboarders, participants with less experience reported longer sessions. More experienced skateboarders seemed to be more organised in the practice of their sessions, as they usually performed a warm-up and cool down.* This suggests that more experienced traceurs may tend to structure their training sessions. When asked about conditioning frequency in the PARK-Q, the option with the most answers was *1-2 sessions/week*, with 38.3% of the total. This result could be linked to parkour's high physical and technical skill requirements (Pagnon, et al., 2022). According to Grosprêtre and Khattabi (2022), 75.6% of the individuals reported practising specific physical conditioning in parkour. Nevertheless, as reflected in Stagi's work (2015), some female practitioners *believed that the males who practice parkour tended to exaggerate their strength training when this was unnecessary.* Those thoughts

of an exaggeration of physical conditioning could probably be linked to those participants (9.9%) who claimed to do conditioning *5+ sessions/week*.

Competition

Competition in parkour has always been controversial. The answers for the PARK-Q in this matter could be linked to that perception because 87.2% of participants said they did not participate in parkour competitions. These results may be rooted in the definition of parkour for some practitioners: *Parkour is a lifestyle sport, and as such provides an alternative to mainstream ones, away from strict rules, standardised settings, and necessary competitions* (Pagnon, et al., 2022). As is quoted from Pagnon et al.'s review (2022), *Currently, parkour is mostly non-competitive, and its rules are non-written and rather flexible in contrast to other sports.* Parkour fits perfectly with Suits' definition of game: *a voluntary attempt to overcome unnecessary obstacles*, and less so with Borge's (2021) understanding of sport: *an extra-ordinary, unnecessary, rule-based, competitive, skill-based physical activity.* Torchia's (2021) findings also provide context for these results. In the words of some participants *structured competition being destructive to parkour, sometimes describing having come to this conclusion through negative experiences of competition-embedded class content, and the costs they perceived from it and Participants also expressed fear towards parkour moving towards competition.* Nevertheless, as Puddle (2019) mentioned in his work, *parkour competitions have existed since at least 2007 and there is a growing support for competitive formats.* As in other lifestyle sports, the performance is never fixed or determinate, but is in a state of flux and change. This context might explain why 9% of participants still take part in parkour competitions. Compared to other action sports, such as skateboarding (Rodríguez-Rivadulla, et al., 2020), the authors mention that only 27.4% participants in their study participated in competitions. This perception of a low percentage is in great contrast to the 9% of the answers for parkour. Rodríguez-Rivadulla (2020) explains that young skateboarders (<18 years) participated more in competitions than their older counterparts. As they say, *this may be explained by the evolution of skateboarding into a more conventional competitive sport. On the other hand, respondents 18 years or older reported performing other sports more than those younger than 18 years, suggesting that skateboarding was mostly practised as a recreational activity in this group.* Another approach to understanding this low percentage of participation in parkour competitions could be comparing it to other action sports such as BASE jumping (Mei-Dan, et al., 2012) and surfing in second-hand. As cited in Mei-Dan et al.'s work (2012), *Nathanson et*

al. (2007) evaluated acute competitive surfing injuries, concluding it to be much riskier than recreational surfing. Torjussen and Bahr (2006) studied the injuries among elite snowboarders during World Cup events and found the injury incidence to be almost twice as high as that of recreational snowboarders. Accordingly, some extreme sports fields, like BASE jumping, tend to eliminate official events where more fatalities could be expected. Parkour practitioners may be aware of this reality and prefer to engage recreationally rather than at a higher or competitive level. Similarly, competition hosts may also seek to avoid injury-related scenarios. Closing the habits block of the PARK-Q, when participants were asked to rate their training level, the majority (47.5%) identified their level as *Advanced* followed by *Intermediate* (29.8%) and *Expert* (12.1%).

Motivation

To date, different tools have been used to assess goals and motivation in different sports, disciplines and samples, such as: young Brazilian athletes (Guedes, et al., 2019), young Spanish athletes (Moreno-Murcia, et al., 2011), professional Romanian athletes (Alexe, et al., 2022), young European athletes (Viladrich, et al., 2013), young Swedish skiers and football players (Stenling, Ivarsson, Lindwall, & Gucciardi, 2018), recreational dancers (Hancox, Quested, Viladrich, & Duda, 2015) and Portuguese swimmers and football players (Monteiro, et al., 2019), to mention a few. One of these measuring instruments is the *Behavioural Regulation in Sports Questionnaire* (BRSQ) (Lonsdale, et al., 2008). This measuring instrument presents different motivation forms. Intrinsic motivation (IM), the most self-determined form, exists when an individual participates because of interest or enjoyment in the activity (Lonsdale, et al., 2008). IM has three equal forms: IM to know, IM to accomplish, and IM to stimulate. These forms of motivation refer to the pleasure an individual experiences while learning, when attempting to accomplish something and when one acts to experience pleasurable sensations, respectively. In all these forms of IM, parkour practitioners showed higher average results (6.04 – 6.13) than Brazilian young athletes (5.48- 6.01) (Guedes, et al., 2019) and young Spanish athletes (5.81- 5.93) (Moreno-Murcia, et al., 2011). On the other end of the motivation spectrum, extrinsic motivation (EM) is also present. The different motivation forms among EM are *External regulation*, *Introjected regulation*, *Identified regulation* and *Amotivation*. Individuals who are extrinsically motivated participate to obtain separable outcomes. External regulation is the least self-determined form and occurs when an athlete participates to obtain rewards, avoid punishment, or satisfy an external demand (Lonsdale, et al., 2008). Similar to IM, in the case

of EM, parkour practitioners differed from other sports and samples. The average answers for EM in the PARK-Q ranged (1.70 – 2.55) whereas young Brazilian athletes averaged (1.91 -2.62) (Guedes, et al., 2019), young Spanish athletes averaged (2.31 – 3.13) (Moreno-Murcia, et al., 2011) and professional Romanian athletes averaged (1.99 – 2.38) (Alexe, et al., 2022). Parkour practitioners' answers were in all forms of motivation lower compared to other studies except for *Introjected regulation* in professional Romanian athletes (2.38±1.46) (Alexe, et al., 2022). Among EM forms, identified regulation exists when an athlete values and judges the separable outcomes of sport as personally meaningful. If the athlete came to view sport not only as important but also in congruence with deeply held values and his or her sense of self, then the behaviour would be regulated by the most autonomous (i.e., self-determined) form of EM, integrated regulation (Lonsdale, et al., 2008). In this case, parkour practitioners scored on average 5.86±1.62, while Pinto's results were 5.45±0.76 (2019), Moreno's 5.39±1.10 (2011) and Alexe's 6.32±0.84 (2022). Overall, parkour practitioners, on average, scored higher in intrinsic motivation forms and lower in extrinsic motivation forms than athletes in other studies. These results can be interpreted in different ways. On the one hand, the lack of a strong federative structure, an absence of a competitive calendar (or competition on its own), no expected or required sports performance by teams, clubs, parents or coaches; nor the need to acquire specific skills to practice, might make parkour a unique discipline that does not put pressure on practitioners, and as a consequence, their motivation comes within and not from external agents. On the other hand, these results may not be compared with one another, as there were differences among samples (i.e., age, sport, characteristics of the sport, country, etc.), and this variability is enough to show these differences that stand out. According to Clegg and Butryn (2012), lifestyle sports and activities are shaped by what Wheaton (2004) refers to as a participatory ideology, which emphasises enjoyment, engagement, flow (Csikszentmihalyi, 1990), risk, and self-actualisation, along with various intrinsic rewards. Therefore, as parkour is considered a lifestyle sport, it may be more influenced by IM than other sports.

Perceived performance factors

Another relevant characteristic in the knowledge of a sports discipline may be the perception its practitioners have about performance factors. Unfortunately, until now, there have not been studies exploring this field among parkour practitioners. The results obtained in the current study show that the factor with the highest average was *Jump power*, followed by *Grip Strength*. The least important in this group were *VO_{2max}* (5.22±1.73) and

Repeated Sprint Ability (5.40 ± 1.55). Participants perceived more relevant neuromuscular capacity rather than cardiovascular capacity. Along with these results, when addressing new performance factors, the factors with higher averages were the same as the overall highest: *Precision*, *Environmental adaptability*, and *Movement techniques* with 6.42 ± 0.74 , 6.57 ± 0.81 and 6.49 ± 0.89 , respectively. On the other hand, two of the lowest averages were also in this group. These were *Suffering capacity* (4.97 ± 1.71) and *Flip repertoire* (4.44 ± 2.00). It seems that parkour practitioners consider the technique and adaptation more important than acrobatics or the suffering capacity more linked to the conditioning sessions from the early days (Angel, 2016). In the last sub-block or social performance factors, one of which was rated as one of the three with the lowest averages overall (4.98 ± 1.87) was *Keeping yourself distracted*. With higher averages in the same block, there were *Socialising* (5.29 ± 1.60) and *Collaboration/ cooperation/ altruism* (5.80 ± 1.43). Although, as seen in previous parts of this work, parkour has been shown to be practised accompanied, the *social performance factors* were not rated as high as *previous performance factors* or *new performance factors*.

These results show that, although some physical condition tests might be useful to compare parkour to other sports (Pagnon, et al., 2022), the reality is that parkour practitioners consider more important other factors than the ones mentioned beforehand. To solve this problem, there have been some attempts to elaborate parkour-specific tests (Dvořák, et al., 2018; Padulo, et al., 2019; Strafford, et al., 2022). On the one hand, Dvorak et al. (2018) made a *Parkour Skills Assessment* that consists of an obstacle course in which points are given to participants if the techniques used meet criteria written in a checklist. This approach could be compared to the performance factor suggested by this research team, *Movement techniques* and *Parkour movement repertoire*. In the PARK-Q, *Movement techniques* was one of the highest-rated performance factors, as well as *Parkour movement repertoire*, so it could be said that this assessment aligns with the perception of international parkour practitioners. As for Strafford et al.'s (2022) speed-run course, speed was assessed and compared to jump power and handgrip strength. These performance factors were taken into account in the PARK-Q, and *Jump Power* was positioned in 9th place with an average of 6.09 ± 1.12 as the first performance factor in the category of *Explored Performance Factors*, followed by *Grip Strength* with 6.01 ± 1.13 average. Nevertheless, these assessments (Dvořák, et al., 2018; Strafford, et al., 2022) are environment-dependent to the place this research was conducted and may not apply to other contexts. On the other hand, the specific parkour repeated sprint ability test (SPRSA)

by Padulo et al. (2019) mainly assesses repeated sprint ability. This performance factor in particular averaged 5.40 ± 1.55 ; if ordered by average scores, this performance factor was the 7th before the last. Moreover, from the fitness battery used to validate the SPRSA (core stability, grip strength, vertical jump, long jump, pull up, 300 m shuttle run, Léger test), only grip strength made it to the top 10 in a matter of average. Furthermore, considering a front flip is required within the SPRSA, it is important to remember that *Flip repertoire* was the performance factor with the lowest average overall. As the results of the current study show, there were multiple performance factors perceived by the practitioners that gather physical, technical, cognitive (Grosprêtre & Gabriel, 2021) and social aspects. Despite the fact that important attempts have been made to measure performance in parkour practitioners (Dvořák, et al., 2018; Grosprêtre & Lepers, 2016; Padulo, et al., 2019; Pagnon, et al., 2022; Strafford, et al., 2022), it might be necessary to take into account other performance factors considered relevant by international parkour practitioners, and not only factors exclusively linked to physical capacity.

Study limitations

Even though the present study has been conducted under high scientific rigour, it is not exempt from limitations. First, although the sample is big, probably it does not represent the whole parkour practitioner population. It is possible that practitioners in different places did not have access to the PARK-Q, and habits, goals, motivation, and perceived performance factors in those communities may vary due to different demographic and socio-cultural contexts. On the other hand, no comparative analysis has been done in the present study regarding different contextual values such as country of residence, practice context, gender, age... Last, the absence of similar studies in the same discipline has hindered comparing results with other works. Further research is needed to analyse these characteristics connected to parkour.

Conclusion

The PARK-Q questionnaire appears to be a useful tool for analysing parkour training habits, motives and performance factors. The PARK-Q showed greater internal consistency than previous studies. Parkour could still be considered a masculine action sport with low federated participation and average experience over eight years. Conflict with terminology seems to continue as some participants consider parkour/ ADD/ freerunning the same global practice. It would be fair to state that parkour is mostly practised outdoors, with friends, in an unstructured way, with 1-2 sessions per week with an average duration of 1-2 hours per session. Condi-

tioning is probably done once or twice a week on average. Most practitioners seem to abstain from participating in parkour competitions. Practitioners' learning process is primarily free (with friends, autodidacts, etc.), and they consider their level of expertise to be advanced. Parkour practitioners' motivation might mainly come within and could be considered intrinsic motivation. Precision, environ-

mental adaptability, and movement techniques can be considered the most important factors, whereas flip repertoire, suffering capacity, and keeping yourself distracted are the least important. New measuring instruments or assessments that align better with the discipline should be explored, considering the performance factors perceived by international parkour practitioners.

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