Coded Empirical Studies - Supplemental Material for Learning in Action Sports: A Scoping Review.
Supplemental material, Coded Empirical Studies, for Learning in Action Sports: A Scoping Review by E. Ellmer, S. Rynne and E. Enright in European Physical Education Review.

#	Authors/ Year	Aim	Sport/ Participants/ Skill level	Study Design/ Study Tools	Analysis/ Theoretical, Conceptual Frame	Main Findings
1	Adi, Aditya, & Citrawati 2010	Use of 3D software to learn basic skateboard skills	Skateboarding 30 males/females; (15-25years); various	**Mixed Method** Survey, interview, User interface (software)	Not specified	The software provided a good alternative to learn basic skateboarding skills.
2	Aggerholm & Højbjerre Larsen 2017	To examine the bodily experience of parkour practitioners and analyse their process of practising and performing tricks as an acrobatic movement phenomenon.	Parkour 15 males; (19-30years); experienced	**Qualitative** *Ethnographic field study*	Existential phenomenological analysis	Acrobatics is an inherent and essential aspect of the self-organised practice of parkour allowing practitioners to carve out new possible movements for themselves and others.
3	Bäckström 2014	To explore the kinaesthetic experience as bodily knowing emplaced in semi-formal teaching.	Skateboarding 64 males/females; (12-36years); various	**Qualitative** *Sensory Ethnography*	Ongoing reflection; Triangulation	Emplaced in a sociocultural and spatio-temporal environment knowledge is formed along paths of movement.
4	Bicknell 2010	To examine the learning and skill development processes that can take place an as informed spectator watching a sporting event.	Mountain biking 1 female; experienced	**Qualitative** *Case study, Ethnographic, Phenomenological observation*	Descriptive analysis	Skill development is not always via (physical) practice, repetition, and attention to a complex set of rules, but can be developed through cognitive experiences also (i.e. observation).

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5	Bicknell 2016	To examine the embodied experience through equipment and technology.	Mountain biking 1 female; experienced	**Qualitative** *Case study, Auto-ethnographic framework*	Phenomenology Exploring ties between risk, place, equipment and perception	Human experiences are mediated by technology. Innovative designs can increase performance, participation rates, enjoyment and success.
6	Bignold 2013	Impact of unicycling, a lifestyle sport, on young people's self-esteem, motivation, social skills, and other areas of learning.	Unicycling 148 males/females; (11-19years); various	**Mixed Method** *Ethnographic methodology* Questionnaire, focus groups	Not clear	Challenge of learning new skills and developing further skills enables motivation, self-esteem, confidence and self-identity. It further helps to develop social skills.
7	Black 2005	To investigate the experiences and subculture of skateboarders, exploring their perceptions of risk and injury in the sport.	Skateboarding 15 males; (14-18years); various	**Qualitative** *Ethnographic fieldwork* Focus groups, interview, observation	Phenomenological analysis	Skateboarders do not appear to be reckless risk-takers; rather they demonstrate commitment and self-discipline, seeking physical and psychological self-mastery through careful calculation of ability and risk, employing strategies of injury prevention that include step-wise skill progression and knowing how to fall.

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8	Boyce & Bischak 2010	To distinguish between the effects of learning by doing and knowledge spill overs versus the effects of changes in technology or economic organisation on improved incidences upon ascent.	Mountaineering	**Quantitative** Expedition reports, journals.	Data Analysis: Probit model	Individual learning by doing and learning through knowledge spill overs contributed to an increase in ascent rates and the decrease in death, frostbite, and altitude sickness rates.
9	Clegg 2011	Dissertation To explore the embodied experiences of practitioners of parkour and freerunning.	Parkour/ Freerunning 11 males/females; (18-33years); Intermediate-advanced	**Qualitative**	Edgework, Phenomenology Thematic analysis	The purpose in training is beyond playful, creative and social elements; Fundamentally safe activity; Takes place in an interactive community.
10	Clegg & Butryn 2012	Journal Article As above	As above	As above	As above	As above
11	Collins, Collins, & Grecic 2015	Exploring the personal epistemology of adventure sports coaches, the existence of the epistemological chain and its impact on professional judgment and decision-making.	Various 7 males; (M =50.3years); experienced	**Qualitative** *Interpretative phenomenological approach*	Interpretative phenomenological analysis (IPA)	Coaching and decision-making is impacted by personal, experiential learning, reflection, communities of practice, and continued professional development.

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12	Cordier, Dietrich, & Pailhous 1996	To introduce a new technique for analysing the dynamics of motor learning in the context of a rock climbing task.	Rock climbing 5 experts, 5 non-experts	**Quantitative** Video, spatial trajectories	Harmonic (Fourier) analysis	Motor performance (learning) and expertise are dynamic processes and cooperative processes (sensorimotor coupling); The natural environment constrains subject motricity.
13	Correia & Bertram 2018	To investigate the specific sources of knowledge acquisition of surfing coaches.	Surfing 11 males; experienced	**Qualitative** Interview	Learning situations (Nelson) Basic unit analysis	Formal education: higher education; non-formal: coaching courses; informal: previous sporting experiences, books, internet.
14	De Ghetaldi 1998	To determine the effects of self-modelling on rock climbing self-efficacy, motivation to learn rock climbing skills, rock climbing skill performance, and rock climbing knowledge in beginning rock climbers.	Rock Climbing 40 males/females; (18-38years); beginner	**Mixed Method** Video, questionnaire, scale	Statistical analysis, ANOVA	Self-modelling effective in improving intrinsic motivation in beginners; Rock climbing classes are effective in rock climbing self-efficacy, motivation, skill and knowledge.
15	Ellmer & Rynne 2016	To explore the learning trajectory of an elite Trials bike rider.	BMX Trials Bike Riding 1 female (25years); elite	**Qualitative** *Case study, IPA*	Workplace learning theory (relational interdependence, Billett); IPA	Learning skills autonomously (learning by doing); Feedback from peers and 'coach'; Learning through videos and the internet, however, feedback through online videos not as valuable.

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16	Enright & Gard 2016	To examine the role of digital media on sport.	Longboard (skateboarding) (12-25years)	**Qualitative** *Ethnographic and participatory approaches*	Connectivism/ Network metaphor Difficult to ascertain	New media technologies play a role in learning: Longboarders are both learners and teachers; They enter, construct, exit own lines of flight according to learning styles, skill levels and ambition.
17	Evers 2004	To understand the lived experience as a male surfer.	Surfing Male; experienced	**Qualitative** *Auto-Ethnography*	Not specified	'Becoming' a (male) surfer is a complex lived experience of surging relations; The body is always in various forms of locomotion, engaged with other bodies, and one that feels.
18	Evers 2006	To explore the sensual world of men who surf.	Surfing Male; experienced	**Qualitative** *Auto-Ethnography*	Self-Reflection Affect Theory Grounded Analysis	The social–biological–psychological have a dynamic relationship.
19	Evin, Sève, & Saury 2014	To examine constructing trust judgements in cooperative interactions during climbing lessons.	Rock Climbing 2 (grade 10); previous experience	**Qualitative** Audio and video recording, Self-confrontation interview	Audio and video analysis	The construction of mutual trust increased cooperation and can therefore positively affect the effective learning of collective tasks.
20	Fernandez-Rio & Suarez 2014	To assess students' ideas, views and feelings after experiencing a parkour learning unit.	Parkour 26 males/females; (11-12 years); beginners	**Qualitative** *Intervention study* Interview	MAXQDA 11 for data management; Thematic content analysis, constant comparison	Parkour has an educational content due to different positive outcomes; Promotion of development of social and problem-solving skills and has the ability to help students cope with fear.

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21	Ghosh, Shah, Navarro, & Chen 2015	To investigate the potential of using musical feedback to enhance the skateboarding experience and to encourage skaters to gain more skills.	Skateboarding 11 beginner-expert	**Qualitative** Field observation, semi-structured interviews	Coding; Affinity map	Audio-feedback increases satisfaction of skating and has potential use in supporting and rewarding users for performing tricks.
22	Golding 2011	To examine the learning experienced through participation by men in two different motor sport organisations.	Motor Sports 219 Male (adult); Not specified	**Qualitative** Focus groups, survey	Australian Core Skills Framework; Narrative analysis	Learning opportunities are presented through the organisation; Community of practice is an alternate form to 'formal' tertiary education; Learning is co-constructed with other members and results in identity formation.
23	Gravestock 2016	To investigate the training practices used by the traceur.	Parkour Not specified	**Qualitative** *Scenography* Drawings	Pas de Deux as investigative framework; Analysis not specified.	Parkour and pas de deux are two distinct and different art forms; Parkour has a partnership with space/environment (similar to ballet and partner-dance); Moments of instability and failure exist, and create options for re-establishing balance, creating a 'dialogue' with the partner/ environment.

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24	Gray & Collins 2016	What interpersonal strategies are employed by adventure sports coaches to influence participants' action and behaviour?	Paddle sports, various 4 males; (39-45years); experienced	**Qualitative** *IPA*	IPA, inductive analysis	Coaches have well-established intuitive social engagement skills, however, they are not consciously or declaratively employed in coaching sessions or used at strategic levels to enhance participant development.
25	Greenberg 2017	How Parkour Coaches learn their craft and their perceptions of current parkour coach education programs.	Parkour 19 males/females; (M=25.8 years); various	**Qualitative** *Basic Interpretive Qualitative Methodology* Questionnaire, Interview	Thematic Analysis	Due to mainly unorganised nature of the sport, many coaches are responsible for their own learning and development. Main sources of knowledge are from previous experience, other coaches, reflection, coach education programs, and the internet.
26	Haines, Smith, & Baxter 2016	To describe the values, behaviours, and beliefs of skateboarders in order to understand the meaning and identity derived from the occupation as well as cultural influences on attitudes toward injury.	Skateboarding 7 males; (18-35 years); various	**Qualitative** Semi-structured interviews	Coding	Learning is a core part skateboarding and tends to occur in social environments. They constantly perform risk analysis and are motivated by the challenge required to perfect a trick. Core values and freedom of the subculture outweigh the risk of injury.

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27	Hennings, Wallhead, & Byra 2010	To use a didactic methodology to examine the content taught and learned by two pairs of undergraduate students participating in reciprocal style episodes of indoor climbing.	Rock climbing 6 males/females; beginner	**Qualitative** *Didactic, quasi-ethnographic framework*	Interpretivist paradigm; Didactic content analysis	Methodology ineffective in developing content knowledge and an increase in performance of higher complexity tasks. However, learning is situated (i.e. Co-construction of knowledge through dialogue, peer-observers for error detection).
28	Hoffmannová, Šebek, Allison, Maina, & Toogood 2017	To examine the interrelations of past events, present experience, and anticipated future actions during the careers of the studied lifestyle sports athletes.	Snowboarding Freeskiing 19 males/females; (m=23.5 years); experienced	**Qualitative** Focus groups, Interviews, Observation	Lifeline Method Grounded Theory	Careers in lifestyle sports are increasingly non-linear; inseparability of the sporting activity and "who the athletes are"; cultural and social contexts play a role in the individuals' careers.
29	Højbjerre Larsen 2016	What can we learn from analysing the bodily practice of learning new movement at a high level of skill in parkour?	Parkour 1 male; experienced	**Qualitative** *Ethnographic field study*	Theoretical perspective of craftsmanship (Sennett)	Creation of dialogue between practitioner (thinking), concrete and material practices. Provides insight into ontology of play and plays an important role in skills development.
30	Hollett 2017	Examining the symbiotic relationship between a teen skateboarder and videographer.	Skateboarding 2 males; (16-17years); experienced	**Qualitative** Video, observations, interview	Interaction analysis	Symbiotic learning partnerships are about the development of specific skills (through nurturing cycles) but also the relationship between the two.

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31	Jones 2011	The role of digital media and creativity in the processes of learning, both mastery of technique and integration into the culture of the sport.	Skateboarding, 60 males; (14-28years); various	**Qualitative** *Ethnographic study*	Constant comparative approach, theoretical model of mediated discourse analysis, atlas.ti	Skateboarders use video (in a number of ways) to facilitate their learning and integration into their communities (i.e. analysing tricks, documenting learning and socialising trajectories).
32	Kaplan-Reimer, Sidener, Reeve, & Sidener 2011	To evaluate the use of an intervention package for teaching indoor rock climbing to children with autism.	Rock climbing, 2 females; (6-11years); beginner	**Mixed Method** *Intervention study* Interview, Stimulus assessment	Statistical analysis	The use of conditional discrimination techniques effective in individuals with autism; Early error correction (verbal) may have helped increase skill acquisition.
33	Kerr & Mackenzie 2014	To examine the experience of mastery and the motivational processes involved in taking on new challenges in skydiving.	Skydiving 1 male; (37years); experienced	**Qualitative** Interview	Reversal theory-based Meta-motivational State Coding Schedule	Accepting renewed challenges and learning new skills is important in maintaining motivation.
34	Kidder 2012	To investigate how the virtual worlds of on-screen life are emplaced in the real world (through parkour practices).	Parkour 22 males/females; (late teens-early 20s); various	**Qualitative** *Ethnographic, Extended case method*	Grounded theory	On-screen Pedagogy: internet crucial for transmission of parkour knowledge (e.g. YouTube tutorials) and virtual interactions to learn skills but also to overcome obstacles.

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35	Kidder 2013	Exploring risks and rituals taken by freerunners in training sessions.	Parkour/ Freerunning 22 males/females; (late teens-early 20s); various	**Qualitative** Participant observation, interviews	Not specified	Rituals of symbolic safety: Progression, conditioning and stretching exercises help in mediating risk.
36	Künzell & Lukas 2011	Students receiving prescriptive skateboard training will demonstrate better performance in an upcoming snowboard course for novices.	Skateboarding, Snowboarding 18 males/females; (14-18years); beginners	**Quantitative** *Experimental design* Video tape, Performance rating	Statistical analysis	Skateboarding lessons have facilitative effect on learning how to snowboard successfully.
37	Kulcycki 2014	What can we learn from outdoor climbing sites?	Rock climbing 21 males/females; (18-36years); various	**Qualitative** Interview	Inductive analysis, coding	Climbing places are physical places associated with the act of climbing, exploring the site and social interactions.
38	Lagache 1995	To examine SCUBA diving classes as communities of practice.	SCUBA Diving Not specified	**Qualitative** *Ethnographic design*	Situated learning theory; Existential analysis (Heidegger)	SCUBA diving classes are communities of practice that indeed fosters social interactions that enhance learning.

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39	Lamb 2011	This study explores the production of urban architectural space and investigates how the art of parkour attempts to (re)appropriate the spaces of the city.	Parkour 15 males/females (9-30years); various	**Qualitative** Interview, participant observation, focus groups	Parkour as both method and analysis; Interpretative analysis	Chapter 5: Relationship between architecture and the body exists. Pedagogy of space (i.e. obstacles allow for creativity).
40	Langseth 2012	To examine the identity construction on an individual and group level among Norwegian surfers.	Surfing 22 males/females; experienced	**Qualitative** *Ethnography*	Identity construction (Donnelly and Young) and symbolic capital (Bordieu); Analysis not specified.	Rules and subcultural values determine inclusion/ exclusion of communities and how identities are constructed.
41	Light 2006	Examining learning and identity formation for young Australians in a surf club.	Surfing 4 males/females; (14years); Experienced	**Qualitative** Interview, observation	Situated learning, Communities of Practice (CoP) to guide analysis.	Learning is complex, multi-dimensional and socially situated. Each learner has their own learning trajectory as they develop skills, knowledge and cultural understanding (both through physical and social engagement).
42	Light & Nash 2006	surf clubs as learning sites compared to schools and other sporting clubs	Surfing 4 males/females; (14years); Experienced	**Qualitative** Interview, field notes, observation	Situated learning, CoP and LPP; Grounded theory	Learning is a complex process located in particular in social, cultural and institutional contexts; Learning is ongoing, not restricted to formal schooling.

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43	Lorimer & Holland-Smith 2012	To examine the influences that led an individual to becoming and remaining an outdoor adventure sport coach	Climbing/ Kayaking Male; expert	**Qualitative** *Case study* Interview	Biographical Research Thematic Analysis	Socialisation processes (influences from family members and school teachers); Early participation in sports; Mastering complex physical and psychological skills increased motivation to partake in sporting activities.
44	Ma & Munter 2014	To examine the dialectic relationship between activity and space/setting and how learning occurs.	Skateboarding Males/females; (10-24years); various	**Qualitative** *Ethnographic*	Coding, ongoing analysis, dialectical approach	Dialectical relationship between setting and activity is socially produced; Space continually 'edited' by skaters, creating new learning opportunities.
45	MacNeill 2007	To explore the processes that contribute to optimal preparation and optimal performance of an athlete competing at the Winter Olympic Games.	Various, Snowboarding 1 female; (28years); expert	**Qualitative** Interview	Performance psychology as conceptual frame; Content-narrative analysis	Optimal preparation and optimal performance is a fluid process; they have courage to test the system and create environment that will allow them to succeed; preparation a major aspect of; reflection on training and ability to adapt to context.
46	Magnussen 2010	To examine imitation as a learning strategy in kayaking communities.	Sea Kayak 23 males/females; expert	**Qualitative** *Ethnographic fieldwork*	Situated learning; Naturalistic-inquiry approach (Patton); Analysis difficult to ascertain.	Imitation is an inferior learning strategy, particularly for participants with greater competence.

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47	McCormack 2017	To understand how participants create a unique identity and remain open to outsiders. And how long-time participants manage this expanding and less exclusive community.	Mountain biking 60 males/females; (M=43 years); various	**Qualitative** Interviews	Theoretical Memoing	Bikers do not establish their identity in opposition to peripheral or nonparticipants. Rather, they welcome new riders in and solidify their identity through the encouragement, training, and development of new riders.
48	McNamee & Steffen 2007	To examine the effects of performance cues on beginning indoor rock climbers.	Rock Climbing 42 males/females; (18-27years); beginners	**Quantitative** *Intervention study*	Content analysis (performance cues); Standard descriptive techniques; ANOVAs	Improvement in performance following performance cues.
49	Mencarini, Leonardi, Angeli, & Zancanaro 2016	Whether and how wearable devices can support the learning of climbing, a sport that entails a great physical and emotional involvement.	Sport Climbing 11 males/females; (M=24 years); beginner 5 males/females; (M=37 years); experienced	**Qualitative** Observation, Interviews	Contextual Inquiry Grounded Theory	Climbing has a strong emotional impact on beginners; therefore, learning to climb requires mastering new motor patterns as well as negative emotions, such as stress and fear. The feeling of danger that climbers often experience can be mitigated by trust in the climbing partner. Finally, communication difficulty between the climbing partners and between climber and instructor exist.

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50	Mohamed, Favrod, Philippe, & Hauw 2015	How can risks associated with skydiving be managed within acceptable limits?	Skydiving 4 males; (M=30.25years); expert	**Qualitative** Video, self-confrontation interview	Course of action theory (Theureau), Coding	The notion of embedded practical knowledge about the risky sport can be used to improve education programs for skydiving performance.
51	Moreira & Peixoto 2014	Can a sporting discipline be characterised through context and individuals' behaviours?	Surfing 5 surfers; (AV=23years); expert	**Qualitative** *Interpretative case study, MAST*	Matrix of Analysis for Sports Tasks (MAST)	MAST is a beneficial tool to help increase developmental strategies that benefit teaching and performance interventions and aids long-term surfer development.
52	Nelson 2005	To determine whether an external focus of attention was also advantageous for the performance and learning of a more complex open motor skill performed in a field setting.	Mountain bike 24 males/females; (18-30 years); No formal coaching or competition experience	**Quantitative** *Intervention study*	Statistical analysis; ANOVAs	All groups showed improvements in performance and learning.
53	O'Grady 2012	How parkour training is constructed and transmitted amongst localised peer groups.	Parkour Male (16-32years); various	**Qualitative** Interview; Online forums, internet resources	Social learning theory; Analysis not specified.	Learning is embodied in the social and physical environment.

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54	Ojala & Thorpe 2015	Considering the role of the coach in Finnish elite snowboarders using the problem-based learning (PBL) approach.	Snowboarding Males/females; expert	**Qualitative** Conversations	Problem-based learning; Analysis not specified.	PBL approach is a useful tool. Coaches to avoid top-down approach and embrace a respectful, non-hierarchical relationship. The relationship is to be built on the needs and motives significant to the athlete (taking into account the unique value system of action sports culture).
55	Olive 2016	To understand the (female) surf culture in Byron Bay.	Surfing Females; recreational	**Qualitative** *Ethnographic*	Feminist cultural interpretation; Analysis not specified.	Knowledge and behaviours are learned through social, cultural and subjective relationships; Ethical negotiations of cultural power relations are considered.
56	Orth, Davids, & Seifert 2016	To provide an overview of constraints on skilled coordination in climbing.	Rock climbing Various	**Qualitative** *Systemic literature review*	Qualitative synthesis of 42 studies	Perceptual and motor adaptations that improve skilled coordination are highly significant for improving the climbing ability level. Elite climbers exhibit advantages in detection and use of climbing opportunities when visually inspecting a route from the ground and when physically moving though a route. However, the need to provide clear guidelines on how to improve climbing skill arises from uncertainties regarding the impacts of different practice interventions on learning and transfer.

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57	Orth, Davids, & Seifert 2018a	To determine if through practice, individuals would acquire a new, more advanced pattern of coordination.	Climbing 8 participants; Beginner	**Quantitative** Pre/Post Test	Ecological Dynamics Approach; Statistical Analysis; ANOVA	The nature of each individual's learning is not dependent on whether he/she can be classified prior to practice as a beginner. Rather, the nature of learning dynamics was likely dependent on each individual's behavioural repertoire prior to practice.
58	Orth, Davids, Chow, Brymer, & Seifert 2018b	To consider potential interactions between prior experience and environmental properties on behavioural certainty during learning and transfer, when performing an indoor climbing task.	Climbing 7 participants; (M=20.9 years); less skilled 7 participants; (M=24.9 years); more skilled	**Quantitative**	Ecological Dynamics Approach; Mixed Method; ANOVA;	1. Learning can be induced using meta-stable design principles regardless of the initial skill level of the participants; 2. existing experience level of the participants interacted with specific route design properties; 3. Skill transfer was seen in both groups; however, the nature of skill transfer was dependent on the initial skill level.
59	Perez-Turpin, Cortell-Tormo, Suárez Llorca, Mira, José, & Andreu 2009	To identify the influence of situated learning in kitesurfing classes.	Kitesurfing 4 males/females; (22years); beginners	**Mixed Method** *Quasi-experimental design* Interview, video	Situated learning theory Quantitative analysis: Sportstec software, Qualitative analysis: AQUAD five	All participants increased their control of sport specific motor skills; Learning involves a process of enculturation regarding language (vocabulary), customs (values) and belief and leads to the development of a new identity. However, this is not always positive (i.e. lack of respect, use of drugs, alcohol, delinquency).

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60	Petrone 2010	What is the nature of conflict in the skate park and what are the affordances/constraints of learning opportunities and identity formation?	Skateboarding Various	**Qualitative** *Ethnographic*	CoP, LPP; Conceptual category of 'conflict'; Analysis not specified.	Conflict and social and ideological tensions constitute key aspects of learning and teaching within CoP; Heckling and snaking contribute to identity construction (inclusion vs exclusion).
61	Petrone 2008	To examine the learning and literacy practices in which a working class group of men engage in (skateboarding).	Skateboarding Various	**Qualitative** *Ethnographic*	Sociocultural and cultural-historical framework; Open coding; Inductive analysis	Cultural peers that support their learning. Cooperative competition enables the production of a group ethos and identity.
62	Prelanda, Cigrovski, Božić, Krčelić, & Rađević 2015	To identify how fear and courage affect kiteboard learning.	Kitesurfing 35 males; (18-48years); beginners	**Quantitative** Questionnaire	Statistical data analysis	Assumption that people with higher levels of fear would more slowly and less efficiently learn kiteboarding technique; However, no correlation found in this study, potentially due to participants being willing to learn new sport.

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63	Rowlett 2015	To examine how experiences common with the roller derby culture shapes 'newcomer' skaters.	Roller Derby 8 females; (24-43years); beginners	**Qualitative** Interview	Phenomenology, Feminist standpoint theory; In vivo coding	Five significant aspects of participating in roller derby: - Intimidation during the initial skating experience; - Challenges of learning new skills; - Developing and maintaining relationships; - Feelings of strength; - Relieving built-up stress.
64	Rynne 2016	How localised surfing programs contribute to the lives of young people in selected indigenous communities, considering pedagogical properties and impact of SDP across Australia.	Surfing 23 males/females; (15-25 years); General population	**Qualitative** Interview, focus groups, questionnaire, photos, video, documents, field notes	Situated learning theory; Workplace learning theory (relational interdependence, Billett); Iterative storylines, hierarchical content analysis	Learning related to the spiritual (re-) connection with land and ocean, re-development of indigenous and surf-specific cultural knowledge and re-establishment of familial and community bonds.
65	Scarpantonio 2016	How would the implementation of an individualised training program impact the perceptions held by Minnows skaters related to skater training?	Roller Derby 8-20 females; skilled	**Qualitative** *Action research* Interview	Learning theory; Generic thematic analysis	Individualised programs supported skill progression and helped better meet the needs of sport participants.

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66	Seifert, Wattebled, L'hermette, Bideault, Herault, & Davids, 2013	How does the environmental design shape perceptual-motor exploration when meta-stable regions of performance are created?	Rock climbing 9 males; (M=21.9years); skilled	**Quantitative** Video, Inertial Measurement Unit (IMU)	Ecological Dynamics Framework; Statistical analysis; ANOVAs	Meta-stable condition of performance may have afforded utilisation of more adaptive climbing behaviours.
67	Seifert, Boulanger, Orth, & Davids 2015	Can skill acquired in one region (gym) created through previous experiences, shape those that emerge in another region (ice climbing)?	Ice Climbing 15 students; (M=24.5years); various	**Quantitative** Video	Ecological Dynamics Framework; Statistical analysis; Cluster hierarchical analysis	Positive effects of previous experience in rock climbing on performance outcomes, climbing movement fluency and (more broadly) movement coordination tendencies in participants climbing ice-falls.
68	Seifert, Orth, Mantel, Boulanger, Hérault, & Dicks 2018	The aim of this study was to investigate how the affordances of an indoor climbing wall changed for intermediate climbers following a period of practice during which hold orientation was manipulated within a learning and transfer protocol.	Climbing 8 males/females; (M=21.0 years); intermediate	**Quantitative** Questionnaire; IMU with North magnetic Reference	Statistical Analysis; Two-way ANOVA	With practice, climbers learnt to explore as they improved their attunement to affordances and they enlarged their landscape of affordances; in particular, the climbers improved their route-finding skill, hold grasp-ability and use-ability. However, these improvements were dependent on the complexity of the route design.

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69	Smith, P. 2002	Does intermixing practice of two versions of a complex task lead to better retention of skill than blocked practice of the same task?	Snowboarding 20 males/females; (18-32years); beginners	**Quantitative** 10-point scale	2x2 (practice condition x task) analysis of variance	Alternating practice improves performance compared to blocked practices.
70	Smith, T. 2010	How do non-traditional sports, such as surfing, affect self-worth, self-esteem, and positive behaviour change?	Surfing 17 participants; (8-18years)	**Qualitative** *Causal-relationship design model* Survey, Focus group, observation	Statistical analysis (descriptive results)	Adolescents achieved higher self-esteem levels, increased positive self-worth, and behaviour change through non-traditional sports.
71	Snyder 2011	Examining the subcultural careers of skateboarding.	Skateboarding Various	**Qualitative** *Ethnography*	Not specified	The subculture is sustainable through the documentation of skateboard tricks which is shared via magazines and videos; the process creates opportunities for various career options (photographer, videographer).
72	Stewart, Traitor, & Hanson 2014	To examine player attitudes toward the use of technology as a training aid.	Roller Derby 323 females (91%); (21-49years); various	**Qualitative** Survey	Not specified	Skaters welcomed a training aid to improve speed and endurance on the track.

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73	Thorpe & Ahmad 2013	To examine how parkour practitioners utilise the internet and social media to facilitate trans-local interactions with youth around the world for social, educational and political purposes.	Parkour Males	**Qualitative** Interview Media	Difficult to ascertain.	The creative engagement in social media assisted in sharing knowledge, building dialogues with others, and had psychosocial benefits (e.g. escape from fear, frustration and anxiety).
74	Wheaton & O'Loughlin 2017	Insight into the poetization of parkour and its challenges in maintaining its diversity and inspiring participation.	Parkour Various	**Qualitative** *Interpretivist ethnography*	Learning as contextual and situated	Informal sporting activities can promote inclusive and equitable physical cultures. The professional development of coaches ('engaged pedagogy' – model) and CoP encouraged.
75	Willmott & Collins 2017	Understanding the 'what' and 'how' of trick progression in snowboarding and freeskiing.	Freeskiing/ Snowboard Athletes: 8 males/females; (M=22.5years); Expert 5 Coaches; (M=38.8 years)	**Mixed Method** Interview; Data collection sheet	Content analysis of interview transcripts; Calculation (Excel)	High variance in trick progression; Athletes move through different stages during the year subject to experiencing the right conditions and facilities, balancing time for progression with time for consolidation, competition periods, and rehabilitating from injuries. Optimal use of training aids to reduce the level of challenge and, injury-risk should be considered by coaches.

#	Authors/ Year	Aim	Sport/ Participants/ Skill level	Study Design/ Study Tools	Analysis/ Theoretical, Conceptual Frame	Main Findings
76	Wilson 2007	To examine sense making behaviours under fatigue and uncertain contexts.	Adventure racing	**Mixed Method** *Conversational analysis and visual ethnography;* Interview, satellite data, video	Interpretive schemas, Coding	Three types of sense-making moves, including information-, meaning-making- and action moves. Teams adapted learning behaviour to extreme contexts by managing mindful interactions, adopting functional model of sense-making leadership and by proactively disclosing vulnerability.
77	Woermann 2012	To analyse the significance of social media for a range of bodily subcultural practices.	Freeskiing Various	**Qualitative** *Single ethnographic case*	Difficult to ascertain	Social media has become integral to hedonic, reflexive, and knowledge practices of action sports participants. Being a freeskier means producing and consuming social media.
78	Zabala, Sánchez-Muñoz, & Mateo 2009	Can the administration of self-controlled, positive and external-focus feedback improve the performance of BMX gate start?	BMX 6 males; (M=19.3 years); Expert	**Mixed Method** *Intra-group experimental design with repeated measures* Interview, systematic observation	Statistical analysis; ANOVA Qualitative analysis	Audio-vidual feedback and cognitive training of the skill can result in significant improvements in the execution of the gate start in BMX.