I COACH KIDS

COACHING CHILDREN LITERATURE REVIEW

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Executive Summary

Millions of children and young people take part in sport and physical activity across Europe every day. However, the majority of their coaches are either not qualified or hold lower level generic qualifications that do not prepare them specifically to work with this age-group.

ICOACHKIDS (ICK) is an international, collaborative, multi-agency, Erasmus+ co-funded project aiming to support the development of a Specialist Children and Youth Coaching Workforce across the EU to ensure all youth sport participants have a positive experience led by suitably trained coaches.

This literature review is a central piece of ICK. It aims to provide the necessary evidence to aid the development of a European Coaching Children Curriculum (ECCC) to guide those developing training opportunities for coaches of children and young people in the European Union and beyond. In the context of ICK, the literature review and the ECCC will inform the development of the three Massive Open Online Courses that will be the final outputs of the project.

From the multiple options available, the expert group opted to conduct a 'theory-led' literature review. This type of review focuses on identifying key elements of the field or topic in question that have contributed to forming the currently accepted general viewpoint (i.e., the espoused theories as to how children's sport should happen) and interrogating the literature to ascertain their value or refute them.

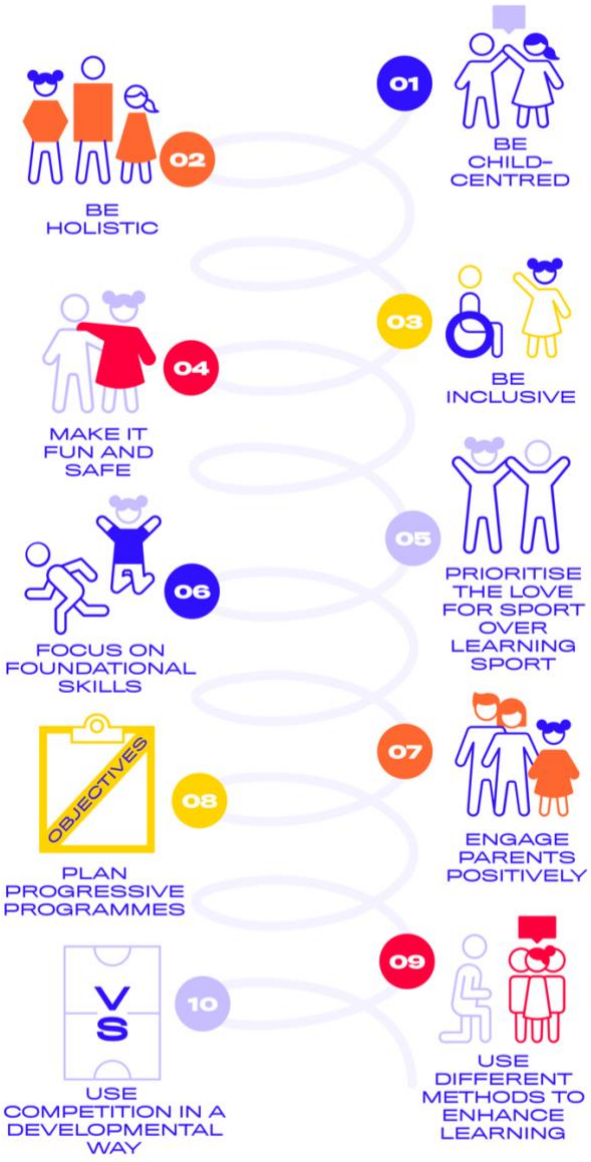
The ICK team opted to base the current review on the generally accepted developmental view of children's sport presented in literature, programmes and policy documents from North America and Europe. Examples of this perspective can be found in the International Sport Coaching Framework (ISCF; ICCE, ASOIF & LBU, 2013), the European Sport Coaching Framework (ESCF; Lara-Bercial et al., 2017) or UNICEF's sport policies (2017). This view of children and youth sport emphasises:

- FUN
- A holistic approach to child development
- Wide access and participation
- Developmentally appropriate opportunities to train, play and compete

The results of the review tend to corroborate the overall philosophy and values espoused by the ICK team, and the fundamental principles identified in development of a theory of children's coaching. Notwithstanding this, the review also found that much work is yet to be done to gather conclusive evidence in various areas. These include:

- Identifying the personal and social developmental outcomes naturally occurring from sport participation and the conditions that lead to them
- Developing more naturalistic approaches to research in the area of skill acquisition
- Exploring the synergies between different pedagogical approaches to skill acquisition based on personal stage of development and the nature of the skill in question

Nonetheless, in light of the findings of the review, the ICK expert group have developed the ICK Pledge which includes 10 Golden Rules for Coaching Children that coaches and sport clubs should adhere to in order to guarantee positive experiences.



We wish you all the best in your coaching and in the development of a specialist children and youth coaching workforce.

The ICOACHKIDS Team

Introduction – What is ICOACHKIDS?

Millions of children and young people take part in sport and physical activity across Europe every day. However, the majority of their coaches are either not qualified or hold lower level generic qualifications that do not prepare them specifically to work with this age-group.

ICOACHKIDS (ICK) is an international, collaborative, multi-agency project aiming to support the development of a Specialist Children and Youth Coaching Workforce across the EU to ensure all youth sport participants have a positive experience led by suitably trained coaches.

This ambitious project is the result of a successful bid by Leeds Beckett University and the International Council for Coaching Excellence to the 2016 call of Erasmus+ applications under Key Action 2 (Cooperation for Innovation and the Exchange of Good Practices – Strategic Partnerships for Vocational Education and Training). The project started in September 2016 and will be completed in August 2019.

What will ICOACHKIDS deliver?

ICK will use a learner-centred, community-based, collaborative approach to create innovative learning and development opportunities for those coaching children and young people. Here are some of the outputs of the project:

- An interactive online platform where coaches can share and learn from each other – January 2017
- FREE e-learning in the shape of three newly developed Massive Open Online Courses (MOOCs) – Summer 2018
- A repository of new and existing resources and materials from all over the world aimed at youth coaches and parents – January 2017
- Regular blogs and articles from expert international contributors – January 2017
- A European Coaching Children Curriculum – Autumn 2017
- A report on the nature of the Coaching Children Workforce across seven European Countries – Summer 2017
- A collection of case studies of good practice in the education and development of children and youth coaches – Autumn 2017

The ICOACHKIDS Team

ICK is led by Leeds Beckett University and brings together a consortium of eight organisations including the International Council for Coaching Excellence (ICCE), Sport Ireland, the Hungarian Coaching Association, Netherlands Olympic Committee (NOC*NSF), Universidad Europea in Spain, Lithuanian Sports University and the Royal Belgian Football Association.

What makes ICOACHKIDS unique?

ICK was designed with a number of unique features:

- *A not-for-profit venture*: ICK aims solely to improve the education and development of children and youth coaches across the EU. It is For Coaches By Coaches.
- *A community of children and youth coaches and coach developers:* led by a broad group of organisations and individuals with a proven track record, ICK aims to bring all stakeholders together to collaboratively solve a common problem they will not be able to individually.
- *Evidence-Based:* all ICK outputs will be based on existing research or new studies conducted by the project partners during the life of the project.
- *A good fit for Formal Education:* the MOOCs will be developed based on learning outcomes, units of learning and credits thus suitable to be adopted by Vocational Education and Training and Further and Higher Education Institutions globally across the European Union. This will facilitate transparency, mobility and employability of children's coaches.
- *Contribution to Key Professional Competences:* by using ICT and being English-based, paired with subtitles in 5 other languages (including Arabic), ICK will contribute to enhancing coaches' overall employability and quality of life.
- *Available and accessible to all in the EU and beyond*: thanks to the ICK online platform, English language-based content and subtitles in 4 languages (French, Dutch, Spanish, and Arabic), coaches will be able to access training in a flexible and inclusive way thus breaking many barriers to education.
- *Integration of Migrant Communities:* by being English-based and providing subtitles in multiple languages spoken by a large proportion of migrant communities like Spanish, French, and Arabic, iCK will facilitate the integration of migrants and the contribution they can make to their communities.
- *Sustainable:* being member and community driven, ICK will continue to grow beyond the life of the Erasmus+ funding. Its outputs will be able to support coaches, coach developers and organisations involved in coach education for years to come.

ICOACHKIDS Project Events:

iCK will deliver three international promotional events:

- Autumn 2017 – 1st ICK Conference: Coaching Children Workforce in the EU – Hungary
- Summer/Autumn 2018 – 2nd ICK Conference: European Coaching Children Curriculum - United Kingdom
- Spring/Summer 2019 – ICK Closing Conference - Ireland

Literature Review Rationale and Format

Literature Review Rationale

This literature review is a central piece of ICK. It aims to provide the necessary evidence to aid the development of a European Coaching Children Curriculum (ECCC) to guide those developing training opportunities for coaches of children and young people in the European Union and beyond. In the context of ICK, the literature review and the ECCC will inform the development of the three Massive Open Online Courses that will be the final outputs of the project.

Literature Review Process

The review was conducted by the consortium expert group comprised of Professor Nicolette Schipper-van Veldhoven and Marieke Fix (Netherlands), Sergio Lara-Bercial, Dr Julian North, Dr A.J. Rankin-Wright and Dr Dave Piggott (United Kingdom), Declan O'Leary and Sheelagh Queen (Ireland), Kris Van der Haegen and Manuel Dupois (Belgium), Dr Rafael Navarro, Dr Sonia García and Dr Pedro Lara (Spain), Lolita Dudeniene and Dr Birute Statkeviciene (Lithuanias), and Dr Ladislav Petrovic and Judith Balogh (Hungary). All the above experts have contributed to various sections of this review.

From the multiple options available, the expert group opted to conduct a 'theory-led' literature review. This type of review focuses on identifying key elements of the field or topic in question that have contributed to forming the currently accepted general viewpoint (i.e., the espoused theories as to how children's sport should happen) and interrogating the literature to ascertain their value or refute them.

The ICK team opted to base the current review on the generally accepted developmental view of children's sport presented in literature, programmes and policy documents from North America and Europe. Examples of this perspective can be found in the International Sport Coaching Framework (ISCF; ICCE, ASOIF & LBU, 2013), the European Sport Coaching Framework (ESCF; Lara-Bercial et al., 2017) or UNICEF's sport policies (https://www.unicef.org/sports/23619_23624.html; Sport, Recreation & Play). This view of children and youth sport emphasises:

- FUN
- A holistic approach to child development
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- Developmentally appropriate opportunities to train, play and compete

In this way, rather than searching widely across vast themes and search terms, the expert group built a theory of children's sport to target supportive evidence from across the world, with special emphasis, where possible, on papers produced in Europe. Evidence contrary to the proposed goals, processes and methods was also sought out.

The iCK expert group adopted the six Primary Functions of the Coach developed in the ESCF and refined in the ESCF (p. 26) to guide the development of the theory of coaching children used in this literature review. The primary functions represent the daily work of the coach and their positive fulfilment leads to the sportsperson's development and improvement. Figure 1 offers a diagrammatic representation of the functions.

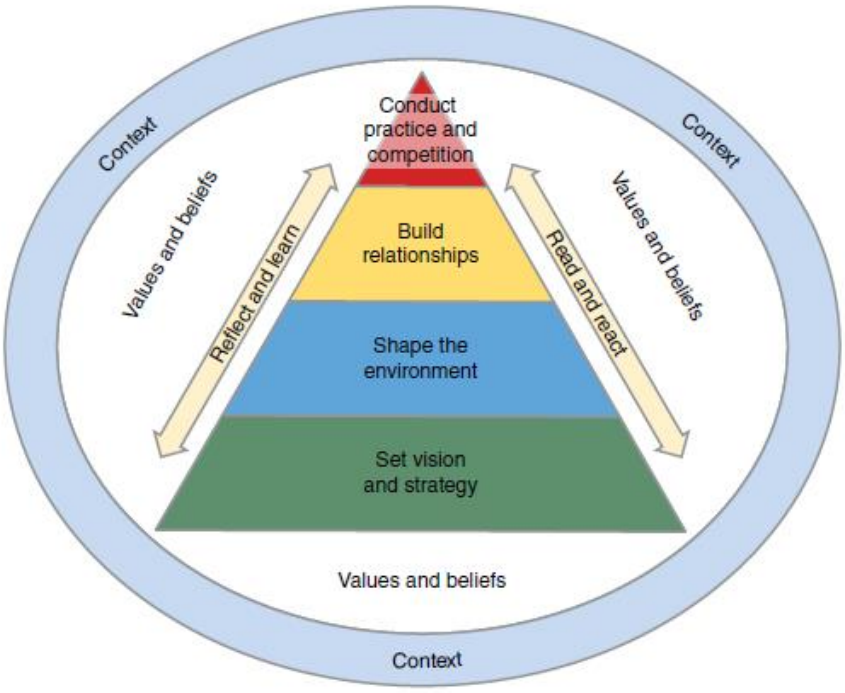

Figure 1. The primary functions of the coach (Reproduced from ESCF, Lara-Bercial et al., 2017, p.27.)

1. **Set the Vision and Strategy.** The coach, in partnership with participants[1] and teams, creates a vision and a strategy based on the needs and stage of development of the children and the organizational and social context of the programme. The coach develops a specific plan outlining the steps required to bring the strategy to life and realise the vision.
2. **Shape the Environment.** The coach works with a group of children and takes responsibility for the common and individual objectives and the institution's. In order to do so, the coach seeks to optimise the environment in which the programme occurs through the procurement and maximisation of personnel, facilities, resources, working practices and the management of other coaches and support personnel.
3. **Build Relationships.** The coach builds positive and effective relationships with children and others associated with the programme. This includes personnel at the club, school, federation and other levels, as well as parents/guardians. The coach is responsible for engaging in, contributing to and influencing the organisational context through the creation of respectful and effective working relationships with those he/she is accountable to (i.e. performance managers, board of directors, etc.)
4. **Conduct Practices and Prepare and Manage Competitions.** The coach organises suitable and challenging practices using effective pedagogy and methodology to promote learning and improvement. The coach prepares for targeted and appropriate competitions and also oversees and manages the participants in these competitions. The coach creates additional and relevant internal and external competitive opportunities where appropriate to promote individual and team development.
5. **Read and React to the Field.** The coach observes and responds to events appropriately, including all on- and off-field matters. Effective decision making is essential to fulfil this

[1] In the context of the ICOACHKIDS, the term 'participants' refers to children and young people. iCK focuses mainly on children up to 12 years of age.

function and is a cross cutting capability that should be developed in all coaches at each stage of their development.

6. **Reflect and Learn.** The coach evaluates the programme as a whole as well as each practice and competition seeking improvements. In addition, personal evaluation and reflection underpin a process of ongoing learning and professional development. An important element of this process is the coach's efforts to support the education and development of other children's coaches.

As stated in the ESCF,

> *These primary functions describe how coaches accomplish their aims in general terms. Substantial variation may exist depending on the nature of specific coaching roles and circumstances. Experienced coaches typically are more engaged in all of the functions than are early-stage coaches. However, all coaches should be aware of and strive to fulfil these primary functions regardless of experience.*
>
> *The foundational role of a clear and robust set of values and beliefs, and a sound vision and strategy informed by the objectives of athletes, teams, and the organisational and institutional context, cannot be overemphasised. (pp. 26-27)*

The table below shows the agreed areas to be covered in this review.

Section Title	Content
1. The context	• The relevance of the socio-political micro and macro context
2. Values & Beliefs	• The importance of understanding one's own values and beliefs in coaching
3. Setting the Vision & Strategy	• How children develop from a bio-psycho-social perspective • Developmental trajectories in sport • Developmental outcomes of youth sport participation • Sport as a tool for personal development • Coaching curriculum development • Planning
4. Shaping the Environment & Building Relationships	• Creating a pedagogical climate • The role of motivation • Safeguarding and protecting children in sport
5. Conducting Practice & Competition	• Learning strategies • The role of competition
6. Reflecting & Learning	• The why and how of reflection in coaching

The ICK expert group acknowledges the limitations of this approach. Not all areas that potentially impact or come into creating the most positive experiences for children in sport may have been covered, nor every single piece of evidence in the literature examined. By contrast, the theory-led approach allows for a much more pragmatic and focused review of existing beliefs and the literature

that either corroborates or refute them. It is our belief that this approach is much more suited to the needs of iCK and more informative to coaches on the ground.

Literature Review Format

The presentation of this literature review unashamedly adopts a child-centred and coach-focused approach. Children's coaches and coach developers, rather than fellow academics are considered to be the main target group. Therefore, it was agreed to produce a highly practical document wherein each section and topic includes in tabular form:

- Key theoretical principles
- Explanatory paragraphs including supporting evidence
- Implications for children's coaches

In addition, as a summary of the literature review the iCK expert group has developed the iCK Pledge, the 10 golden rules of coaching children that should always be observed to foster positive developmental experiences.

Literature Review Table

In the following pages, each section will be presented as a table in the format describe above.

1. The Context

The Relevance of the Socio-Political Micro and Macro context		
Key Principles	**The Evidence**	**Impact for Coaching**
• Sport and sport coaching (and children's sport coaching) occur within a particular social and political context.	• Sport coaching, as an activity, is considered by some researchers to be "the result of dynamic interaction between coaches, athletes, and the socio-cultural context" (Cushion and Jones, 2006: 143). In their review of literature, Abraham and Collins (2011: 378) state that "coaching environments encompass pedagogical, social, and socio-political contexts that require decisions to be made, where possible against 'external criteria,' on how to interact with and influence (and be influenced by) various stakeholders". There is an increasing recognition in academic research of the need to understand the socio-cultural context and resources available in a particular country and sport, etc. in order to appropriately embed sport systems, for example player development systems, within this (Henriksen, et al., 2010b; Henriksen, et al., 2010a; Larsen, et al., 2013; North, et al., 2016).	• Children's coaches should have an awareness of the social and political context that they are working in. • A thorough research and consideration of existing socio-cultural context and resources by clubs and federations is an important part of the development of effective systems for children's coaching (North et al. 2016). • Increasing and retaining mass youth participation in sport clubs can positively affect the performance of professional teams (Galatti, et al., 2016). Case study example (Galatti, et al., 2016): a basketball club in Spain - the sport programme is based on the integration of performance and participation; the development of elite athletes while also facilitating long-term participation and positive youth development in sport. It focuses on "internal communication and educational requirements that foster well-rounded youth development teams. The coaches are encouraged to talk to the parents, be attentive, and fulfil the basketball system, an educational program by the club that aims to reinforce a set of values pertaining to healthy habits, positive attitudes, attendance, interaction with the team, punctuality, respect, and good grades" (Galatti, et al., 2016: 26). (Note: a club must develop programmes according to its own operational standards and context. This best
• At a macro level, coaching systems are embedded in a country's existing and available socio-cultural and wider resources. • What is, or is not, possible within a particular country is	• At a macro-level, the social and political context impact on national coaching systems in a country with regards to the existing and available socio-cultural and wider resources (North, et al., 2016). This includes national attitudes to children's coaching, children's participation levels in sport and physical activity; wider educational attitudes and practices for	

strongly linked to existing socio-cultural resources. • The social and political context impacts on organisational cultures in sport settings (e.g. clubs). This influences how children's coaches are viewed, for example who is best suited to coach children and who is	children's sport; sport organisations (e.g. club, school, university), infrastructure and facilities (North et al. 2016). This wider context implicates the embedding of coaching systems for children. • North et al. (2016) has cautioned that there are tendencies in both academia and in policy and practice to isolate concepts and to work with ideas and programmes that are directly and uncritically applied to different contexts without forethought or modification. E.g. Youth development might be reduced to physical components or psychological components. These are individual (or sub-individual) reductions rather than conceptualising youth development as systemic and social. • Abraham and Collins (2011) argue that coaches should critically consider the required strategic socio-political goals of their work: for example, defining key educational and health goals for the children's coach, and be proactive in developing a socio-political environment that meets their needs. This includes identifying who will need to buy into their socio-political goals, how they are communicated and who they will need to be communicated to. They refer to this as the Socio-Political-Strategic Level (Macro). • Gendered cultural assumptions and stereotypes held by those in influential positions within sport organisations and clubs have, in some cases, resulted in women, rather than men, being positioned in coaching roles working with junior age groups (Rankin-Wright, 2015). For example, research in the UK has documented the challenges that women coaches face in trying to	practice example can be adapted, but not necessarily generalised for other clubs.) • To shift the behaviour of children's coaches towards those more facilitative of positive athlete outcomes, coaches require training resources, time and support. Crucially, targeted behaviours must fit individual coaches and the specific coaching contexts in which they work, including the organisational and cultural setting (Erickson and Gilbert, 2013).

best suited to coach senior athletes/players.	progress in sport coaching when colleagues, managers, and parents hold gendered stereotypes regarding the suitability of women as coaches (Norman, 2010;2012).	
• A children's coach's work is linked to, and influenced by, their interactions with others, and takes place within a particular social and cultural context. • The role of coaches, family, friends, and immediate social support is important for increasing children's lifelong participation in sporting activities.	• The term micro-politics is used to describe these "political interactions between social actors in different organizational settings, such as schools, sports clubs and teams, companies, and families" (Potrac and Jones, 2009a: 225). At a micro-level, a children's coach's work is linked to others, including children and colleagues in a particular social and cultural context (Potrac, et al., 2002). As a result, the physical setting in which sport coaching takes place and the social support and involvement from relatives and friends are important elements that affect the likelihood of children continuing to participate in sporting activities (Côté, et al., 2013; Galatti, et al., 2016). Potrac, et al. (2002: 184) state that the coaching process is "inextricably linked to both the constraints and opportunities of human interaction". Potrac and Jones (2009a) argue for coaching to be investigated from a micro-political perspective in order to examine the power and interpersonal relationships inherent in sport coaching.	
• The social and political context influences coaching objectives and behaviours.	• The beliefs and assumptions of stakeholders, including coaches, children and youth participants, parents, etc. drive much of the behaviour observed in social interactions in coaching (Abraham and Collins, 2011). For example, d'Arripe-Longueville, et al. (1998) found that elite judo coaches engaged in a	

	number of strategies to entice the best performance from athletes, including verbally provoking, displaying difference, and direct confrontation, and these actions were justified as being culturally appropriate within a 'winning system'. Coaches have also been found to engage with conscious strategies for impression management, to manipulate situations and to gain the respect of athletes based on beliefs of needing to act in a "coach appropriate" way (Potrac, et al., 2002; Cushion and Jones, 2006; Potrac and Jones, 2009b; Thompson, et al., 2015). In their review of literature for children's sport (predominantly from the United States of America and Canada), Erickson and Gilbert (2013) reported that studies had examined differences in coach-youth athlete interactions and coach behaviours according to contextual features of specific sport settings, as well as situational characteristics, such as game situation (e.g. winning or losing). Based on their review, they concluded that coach-athlete interactions in children's sport were typically characterised by high amounts of instruction, support and encouragement, and management behaviours with a positive focus. Studies employing interventions to target coach-athlete interactions have suggested that it is possible to shift children's coaches' behaviour towards those more facilitative of positive athlete outcomes (Barnett, et al., 1992; Smoll, et al., 1993; Smith, et al., 1995; Smith, et al., 2007). For interventions to be successful, children's coaches require training resources, time and support, and targeted behaviours must fit	

	individual coaches and the specific coaching contexts in which they work, including the organisational and cultural setting (Erickson and Gilbert, 2013).	

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2. Values & Beliefs

The importance of understanding one's own values and beliefs		
Key Principles	**The Evidence**	**Impact for Coaching**
• Expert coaches have a well-developed philosophy which guides their practice • Understanding one's own values and beliefs in coaching and life is central to effective coaching practice • Effective coaches continuously reflect on their practice and how it matches their philosophy • The interplay between context, values and beliefs and coaching behaviours (i.e., (mis)-alignment) is pivotal to coaching practice	• Coaches' values and beliefs, what is sometimes referred to a coaching philosophy, guide their decision-making process and, ultimately, their actions (Collins, in press; Gilbert, 2017). • Coaching philosophies are personal and individual, yet the values espoused by the context in which the coach work need to be considered. • An example of the current values espoused in youth sport policy is included in the European Sports Coaching Framework (ESCF, Lara-Bercial et al., 2017) The ESCF flags up that *'A prerequisite of coaching should be a commitment to the positive sport experience and development of each athlete.'* (p. 18). According to the ESCF, the goals of sport participation can be grouped into 3 categories of outcomes (p. 22-23): 1. Sport competencies 2. Personal competencies 3. Life experience. These are, however, outlined in more detail in other sections of the literature review. • The ESCF also identifies, '*The clear expectation that coaches will perform their duties in an ethically responsible way, play by the rules at all times and protect the integrity*	• Children's coaches need to familiarise themselves with the prevailing values and beliefs of the contexts in which they coach. Where alignment is not possible, coaches must decide whether they can still coach there, change or move to a different setting that is more aligned to their values and beliefs. • Children's coaches should have an open-mind. As their knowledge grows and they gain experience, their beliefs and values will change • Beginner coaches may adopt 'an approach to their coaching' without being able to define their coaching philosophy. This will develop over time if they write it down and are reflective (a learned skill) • A stepped approach to the development of a philosophy should be introduced in coach development, which links: ○ beliefs/values ○ coaching approach/philosophy ○ coaching objectives ○ coaching practice ○ coaching context (club/children) ○ challenges to the adopted philosophy • Children's coaches should engage with other coaches to discuss their approach/philosophy, why they have adopted it and the challenges they face matching it to their practice

	of the sport.' (p. 18) (http://truecoach.wada-ama.org) • These external guidelines contribute to the broad context in which sports coaches operate and should therefore inform their philosophy. • Specifically, the coach will need to consider: 1. the specific club/school in which they coach and its approach to children – programmatic values & beliefs (Camire et al., 2012) 2. the parents/families of the children they coach 3. the specific needs of the children they coach (growth & development, LTAD (Balyi et al. 2013). • Each coach will need to develop a coaching philosophy, taking their context into account but based on their personal values and beliefs (Vealey, 2005; Lara-Bercial & Mallett (2016); www.ausport.gov.au). This is a learned process and should be considered in coach development. • Martens (2012) outlines a practical approach to coaches developing a Coaching Philosophy and with reflection included, allows for it to evolve over time. • Cote and Gilbert (2009) flag the concept of expertise in different coaching domains, including coaching children. In this respect they propose a set of recommendations that could form the basis of a coaching philosophy for coaching children:	• Coaches should make time and space to reflect on their coaching – approach/philosophy, behaviours, alignment of actions. This should be done at regular intervals and when they face challenges in their coaching

	1. Adopt an inclusive focus as opposed to an exclusive selection policy based on performance 2. Organize a mastery-oriented motivational climate 3. Set up safe opportunities for children to have fun and engage playfully in low-organization games 4. Teach and assess the development of fundamental movements by focusing on the child first 5. Promote the social aspect of sport and sampling • Jenkins (2010) collates the research on Coaching Philosophy and flags three things: 1. the need for coaches to be self-aware 2. that a coach's stated philosophy and their actions may not always align 3. a coach's philosophy can evolve over time • To act on these points, a coach needs to have a growth mind-set (Chase 2010). This results in the coach setting an environment for the children they coach to be challenging and provide positive development. It also allows the coach to be self-reflective (a learned skills) on whether their coaching actions match their coaching philosophy. Coaches should self-reflect after a season, after significant events during the season and on a session/event basis, particularly if they felt their emotions got the better of them or an aspect was out of their control and how they reacted to it.	

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3. Setting the Vision and Strategy

How Children Develop from a Bio-psycho-social Perspective		
Key Principles	**The Evidence**	**Impact for Coaching**
• Children's development is conditioned and driven by the interaction of biological, psychological and social interactions throughout the life-course • Development is thus driven by a combination of genetic (nature) and environmental factors (nurture: socioeconomic; structural; constrains/enablers; etc.) • This interactive process suggests children's development is individualized, non-linear and discontinuous with moments of engagement, disengagement, and re-engagement, and developmental acceleration, stalling, and potentially regression.	Children's development in sport is conditioned by the same processes that impact on wider human development, yet the literature on performer development systems only occasionally or implicitly makes reference to theory and evidence from the human development literature (e.g. Henriksen et al., 2010a; Martindale et al., 2005). The three main theoretical positions on human development are: (1) genetically determined/centred development; (2) environmentally determined/centred development; and (3) an interactionist position between the two. An interactionist position between genes and environment is almost unequivocally the mainstream position in philosophy (Bhaskar, 2012), biology (Lewontin, 2000; Noble, 2008; Ridley, 2011), psychology, and developmental science (Bronfenbrenner & Morris, 2006; Gagné, 2013; Gottlieb, Wehlsten, & Lickliter, 2006; Sigelman & Rider, 2012) though there are differences in models and in the importance of genetic contributions. Not only do genes and the environment contribute to human development, they do so in a particular way. From the moment of conception, genes and the environment work together epigenetically and emergently (Carey, 2012; Gottlieb et al., 2006). As Sigelman and Rider suggest:	• Selection and De-selection of children before puberty should be avoided in most sports, or at least re-considered. ○ The multiple and interacting components and processes mean that human development is highly heterogeneous and individualised. The number of variables involved and the interaction between them in player development suggest that it is non-linear and unpredictable. ○ It is difficult, if not impossible to identify/predict talented children in most sports before puberty. ○ Therefore, a key issue appears to be keeping children in the system long enough to reach their potential and avoid early deselection. • There is a limit to what system architects, coaches and players can realistically hope to control. The interactionist model suggests that participant and performer development will necessarily be subject to a range of influences and forces. This means stakeholders have to accept that their interventions will only be successful under certain indeterminate conditions. Consequently, systems have to be flexible, adaptable and above all patient (Martindale et al., 2005). Coaches need to

	"human development is an incredibly complex process that grows out of transactions between a changing person and a changing world and out of dynamic relationships among biological, psychological, and social influences. No contributor to development – a gene, a temperament, a parent, a culture – acts alone and is unaffected by other influences on development" (Sigelman & Rider, 2012, p. 2 italics added).	recognise that their role is important whilst repositioning themselves from 'controllers' to 'facilitators/guiders/influencers' working with the resources available to them and doing the best they can. • Whilst from one point of view it could be argued this eases the expectations and pressures on coaches 'to get it right', it will remain to be the case that certain coaching strategies and approaches that can be used to influence and guide performer development will be better than others and these places a new kind of pressure on coaches as they attempt to manage and influence myriad factors. • Coaches' need to be aware of their role and influence within the broader development pathways of their youth athletes
• There appear to be broad identifiable age/stages in a child's development that have important lessons for establishing appropriate development environments, programmes and sessions	In sport, research has increasingly conceptualised participant development as a multi-layered complex emergent process involving the dynamic and non-linear interaction of multiple variables – genetic-environmental; physical, psychological, social; luck etc. (Bloom, 1985; Button, 2011; Helsen, Hodges, Winckel, & Starkes, 2000; Phillips, Davids, Renshaw, & Portus, 2010; Simonton, 1999; Singer & Janelle, 1999; Vaeyens, Lenoir, Williams, & Philippaerts, 2008).	
• It is difficult, if not impossible to identify/predict talented individuals in most sports before puberty	There are increasing concerns about the practice of early talent identification and selection of children (e.g. Côté & Lidor, 2013b; Régnier, Salmela, & Russell, 1993; Vaeyens et al., 2008). Genetics certainly play a role in development (Singer & Janelle, 1999) – but it remains highly contentious whether early genetic markers (or their apparent physical manifestations) transfer to exceptional performance in adulthood (Vaeyens et al., 2008).	
• Development is a long-term process	One of the most consistent results from research examining the development of talented and expert performance relates to the length of time involved (Baker,	

	Cobley, & Fraser-Thomas, 2009; Bloom, 1985; Newell & Rosenbloom, 1981; North, 2012a; Simon & Chase, 1973). Although estimates of the length of the development process from novice to elite vary, many researchers quote the figure of 10,000 hours, or 10 years (e.g. Ericsson et al., 1993). In sport, a connection has been established between the number of practice hours and expertise (e.g. Baker, Côté, & Abernethy, 2003a, 2003b; Baker, Côté, & Deakin, 2005; Gould et al., 2002; Helsen et al., 2000; Helsen, Starkes, & Hodges, 1998; Hodges & Starkes, 1996; Larsen et al., 2013; Mischel, 1973; Starkes, Deakin, Allard, Hodges, & Hayes, 1996).	
• Development is staged/phased and these phases/stages can be roughly identified using a variety of theories and markers • Identifying and tracking some of these markers can potentially help coaches tailor support to children • Development happens at different rates and times for different children and for different areas of development	Age-stage differentiation is based on the idea that individuals at different ages and stages of development acquire particular characteristics or can be exposed to environments that provide the foundation – or enable them to be ready – for engagement in particular types of training activities (though chronological age and stage may not always be aligned and there can be considerable individual differences). Age-staged approaches have a considerable history in physiology, psychology, and education and have also featured strongly in the context of player development and coaching. Moreover, age-stage development has been a central feature of research into physical and neurological development (e.g. Scammon, 1930), cognitive development (e.g. Piaget, 1952), and movement development (e.g. Gallahue, Ozmun, & Goodway, 2012). For example, Gallahue, Ozmun, and Goodway's (2012) life-span model of motor development suggests there are four	• Coaches must take into account the developmental age/stage of the children they coach in the various developmental areas and build programmes, sessions, activities and competitions that are appropriate. • Coaching and competition should be differentiated and inclusive to cater for different levels of ability/disability • Where possible coaches must keep track of developmental and performance markers to guide planning and inform practice • Fundamental motor skills must be prioritized at an early age

• Fundamental motor skills are a precursor of specialized sport skills • Development happens at different rates and times for boys and girls. • Different physical capacities must be worked on at different intensities/with different levels of priority at different stages of development.	broad stages of movement development: reflexive movement (from birth to one year old), rudimentary movement (one to two years old), fundamental movement (two to seven years old), and specialised movement (seven to adult hood). Thus from a movement development perspective, there is a notable transition age between seven and upwards. In sport, a number of age-stage models have been proposed including the Long-term Athlete Development (LTAD) model (Balyi & Hamilton, 2004; Balyi, Way & Higgs, 2013; Balyi & Williams, 2009; Stafford, 2005) and the Developmental Model of Sports Participation (DMSP) (Côté, 1999; Côté et al., 2007). A further overview of non-sport and sport age-stage development models is provided as an appendix. A collective analysis of these models suggest a number of key age groups – 5-7 years, 8-11 years, 12-14 years, 15-18 years – and key transition points around 4-5 years, 7-8 years, 11-12 years, 14-15 years, and 18-19 years. There is a considerable amount of research and commentary analysing the use of age-stage thinking both descriptively and retrospectively, and as a means of thinking about player development prescriptively. From a descriptive and retrospective perspective research has pointed toward a tendency in sport to ignore age-stage thinking particularly in younger age-groups where children are often exposed to variants of the adult game, adult practice structure and adult coaching. Partington and Cushion (2013) describe professional soccer as a 'living and ecologically sensitive' site for age-stage approaches. Citing research by Fraser-Thomas et al. (2008a) they suggest that "a mismatch between children's developmental needs and	

	coaching behaviours leads to more dropout, injuries and shorter careers than when children are trained by a competent age appropriate coach" (p.403). A key aspect of age-stage thinking is transition points – by definition, this is when something novel and significant happens (for example, change, progression, or drop-out). At the performance end of youth sport, a number of researchers have commented on the difficulties for players transitioning between age-stages and this confers responsibility on coaches and others to ensure that the former are equipped for what lies ahead (e.g. Larsen et al., 2013; MacNamara, 2011). Alfermann and Stambulova (2007) have provided a set of recommendations to facilitate positive transitions which emphasise the importance of information provision and communication between stakeholders (i.e., coaches, managers, elite athletes). Age/stage models, both in and out of sport, have been subject to criticism notably concerning the dynamic, complex and non-linear nature of human development suggesting that individual players may be very different to their chronological age profile (e.g. Bailey et al., 2010; Ford et al., 2011; McMorris, 1999; Thelen & Smith, 1996). More specifically, it has been argued that 'stages' in their early behavioural and cognitive formations were general descriptive categories (individuals of a particular age on average have the following physical, psychological characteristics), but were unfortunately reified to become explanatory or causal categories suggesting a single or unified causal development process (Brainerd, 1978; Thelen & Smith, 1996). Piaget's cognitive development stages had some empirical validity at the aggregate large	

	scale level, but not "when developmentalists turned up the microscope" (Thelen & Smith, 1996, p. 22). Sport researchers have suggested using other markers e.g. relative age, development age, and skeletal age etc. to provide a means for coaches to individualise development programmes, environments and activities. However, some researchers doubt the coaches' ability to apply this information appropriately (Ford et al., 2011). Other researchers have suggested the use of developmental or learning phases disconnected from chronological age. For example, Bloom and colleagues (1985) suggest a sequential development process – 'early, middle, late' that is disconnected from chronological markers. It is important to note that there have been other criticisms of these models. For example, Balyi and Hamilton (2004) have been criticised for basing their development model largely on physiological principles which remain unsubstantiated (Bailey et al., 2010; Ford et al., 2011). The search is on for a developmental model which integrates different disciplinary perspectives and has robust research backing. Recently, Lloyd and Oliver (2012) have suggested an alternative model focused on the physical development of children and young people, the Physical Youth Development Model (PYDM). The PYDM has certain similarities with the LTAD model, yet it also brings into question some of its assumptions. In addition, other participant development models have focused on the athletes' type of engagement. For instance, the Developmental Model of Sport Participation (DMSP; Côté & Abernethy, 2007; Côté & Fraser-Thomas, 2016)	

	proposes three stages (sampling, specialisation and investment) based on the degree of specialisation and the intensity of the engagement. The DMSP indicates that early diversification and progressive increases in intensity provide a solid foundation for personal development, lifelong engagement in sport and for some, expert performance in the future. The table below (after the references section) compares LTAD, PYDM and DMSP models. Ultimately, age-stage information is just that, information - it is not a rigid programme - coaches should use the information when they think it is useful to a child's development.	

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Comparative Table – LTAD vs YPDM vs DMSP

<table>
<tr><th colspan="3">Key Principles/Recommendations by Age/Stage</th></tr>
<tr><th>LTAD (Balyi, Way & Higgs, 2014)</th><th>PYDM (Lloyd & Oliver, 2012)</th><th>DMSP (Côté, 1999)</th></tr>
<tr><td>Active Start 0-6
Learning through unstructured play
Focus on Fundamentals of movement: Balance, Coordination, Agility and Speed (ABCs)</td><td>Early Childhood (2-4)
Focus on Fundamental Movement Skills and Strength development
Unstructured activities</td><td rowspan="2">Not applicable</td></tr>
<tr><td rowspan="2">FUNdamentals 6-8 (Girls) 6-9 (Boys)
Keep it fun
Multi-sport participation
Practice and master Fundamental Movement Skills before doing sport specific skills
Continue developing ABCs
Work on strength, endurance and flexibility through games
Avoid specialisation</td><td rowspan="2">Middle Childhood (5-9 Girls/5-11 Boys)
Early on foster FMS and progressively start working on Sport Specific Skills
Maintain join mobility and flexibility
Focus on agility, speed, power and strength
Endurance and Metabolic Conditioning is desirable
Low structure</td></tr>
<tr><td rowspan="2">Sampling Years (6-12)
Multi-sport participation is highly recommended
Emphasis on enjoyment and building a broad base of skills
Unstructured and low intensity
Deliberate play should be as important, if not more, as organised sport at this stage
Less emphasis on selection and representative teams and more on mass participation
Diversity offers a foundation, but it does not distinguish future expert performance
Diversity is linked to lifelong participation
Short, multiple seasons within a year</td></tr>
<tr><td>Learning to Train (9-12)
Encourage unstructured play
Short-season multi-sport engagement recommended
Narrow to 3 sports at the end of the stage
Work on endurance, strength, speed and flexibility using body weight
Maintain the fun
Continue to provide Fundamental Movement Skills
Single periodisation</td><td rowspan="2">Adolescence (10-19 Girls/ 12-20 Boys)
Maintenance of FMS and mobility
Strong focus on SSS
Up to 15/16 years old this is a critical period for the development of agility and speed
Power and strength should be maximised throughout this stage
Potential for hypertrophy starts grows exponentially in this stage
Endurance and metabolic conditioning is also well received at this point
Moderate to high structure</td></tr>
<tr><td>Train to Train (12-15)</td><td>Specialising Years (13-15)</td></tr>
</table>

<table>
<tr>
<td>

- Prioritise aerobic development
- Emphasise flexibility due to rapid growth
- Maximise accelerated adaptation to strength training
- Hone sport specific skills
- Focus on 2 sports
- Single and double periodisation

</td>
<td rowspan="2"></td>
<td>

- Reducing number of sports
- Short multiple seasons within a year
- Higher intensity

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Train to Compete (16-23 Boys; 16-21 Girls)

- Year-round high intensity sport specific training
- Tailored programmes for each individual
- Specialise into events and positions
- Periodisation based on competitive calendar
- Monitor ancillary capacities
- Focus all training on the needs of competition

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Investment Years (16+)

- Singular focus on one sport
- Predominance of deliberate practice
- Very high intensity

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Adulthood (21+ Girls/ 20+ Boys)

- Continue to maintain FMS and mobility
- Strong focus on SSS
- Maintain and develop agility and speed
- Power and strength should also be maximised throughout this stage
- Less receptive to hypertrophy, but still important
- Endurance and metabolic conditioning is maximised at this point

Very high structure

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Developmental Trajectories in Sport		
Key Principles	**The Evidence**	**Impact for Coaching**
• Research provides a number of tools or models for coaches to think about the kind of development environments they should set up for children • Most of these tools/models differentiate between the age/stage of the participant/performer and/or the latter's motivation for engagement in sport • Models generally differentiate between children aged 5-7 years, 8-11 years, 12-14 years, 15-16 years, 17-18 years, 19-21 years, and 22 years and over – although the age/stages identified vary between models • Models also generally differentiate between beginning, recreational, performer development, and high-performance motivations for engagement in sport • Placed together the models provide a great deal of information on how sporting environments change by age/stage and motivation which requires further reading. However, broadly speaking:	• Examples of development models include: Balyi's *Long Term Athlete Development* (Balyi & Hamilton, 2004; Stafford, 2005), Côté's *Developmental Model of Sports Participation* (Côté, 1999; Côté, Baker, & Abernethy, 2007), and more recently, Lloyd and Oliver's *Composite Youth Development Model* (Rhodri S. Lloyd et al., 2015) • There are a number of policy and practice based research reports which also discuss applied development models and the principles and the details underlying them (e.g. North, 2012; North, Lara-Bercial, Morgan, & Rongen, 2014; North, Lara-Bercial, Rankin-Wright, Ashford, & Whitaker, 2016; North, Morgan, & Rongen, 2012) • There are a number of applied examples of development models e.g. England football – DNA phases, New Zealand football – national player development framework, Scottish football – 'national player pathway' • Research suggests participant and performers vary physically (Gallahue, Ozmun, & Goodway, 2012; R.S. Lloyd & Oliver, 2012), psychologically (MacNamara, 2011; MacNamara, Button, & Collins, 2010a, 2010b; Piaget, 1952) by age • Children, young people and adults have different motivations for engaging in sport (Russell, 2014) • There are a growing number of research based discussions of early vs late specialization (e.g. Baker, Cobley, & Fraser-Thomas, 2009; Gonçalves C, Rama L, & Figueiredo, 2012) • There are a growing number of discussions of practice structure and its variations (e.g. Côté,	• Children's coaches need to think about the kind of development environments they establish in relation to the age/stage and motivations of children and young participants • There is a clear difference between children, young people, and adults, and thus coaches must differentiate between them when setting up sessions • There is a clear difference between more recreationally and performance orientated participants, and thus coaches must differentiate between them when setting up sessions • Coaches also need to think carefully about individual participant needs and carefully apply research guidance. • Coaches must sensibly apply the information from development models to their contexts and individual participants/performers – they must certainly not over-apply this information in a rigid one size fits all approach. This requires appropriate judgement and decision making from the coach

• In the beginner/recreational pathway (which a majority of participants will move through) the models emphasize:
  ○ Young children: psychological and social security, enjoyment, fun, games, chance to develop fundamental movement skills
  ○ Older children: chances for social interaction, challenge, greater ownership of structure of activities
  ○ Adults: social interaction, some challenge, even greater ownership of structure of activities
• In the performer development /high performance pathway (which only a minority of participants will move to)
  ○ Young children: psychological and social security, enjoyment, fun, games, chance to develop fundamental movement skills (thus similar/identical to the beginner/recreational pathway)
  ○ Older children: development environments, practice
	Erickson, & Abernethy, 2013; Muir, Morgan, & Abraham, 2011)
	• Contrasting views on how coaches should think about a position research is provided by Ford et al. (2011) specifically on long term athlete development and North (2017) more generally	

activities and coaching behaviours that encourage physical, psychological, social/lifestyle, movement/ technical and tactical (PPSTT) development in the chosen sport(s). There is also preparation required for more serious competition stages. ○ Young adults: focus on fine tuning PPSTT characteristics with a view to competition success • Note: There remain debates about how early children and young people should specialize in one sport in the beginner/performer development/high performance pathway • Note: There remain debates about the structure of practice activities i.e. technical skill based or tactical game based for children and young people in all pathways but notably in the beginner/performer development/high performance pathway		

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Developmental Outcomes of Youth Sport Participation		
Key Principles	**The Evidence**	**Impact for Coaching**

• Coaches should strive to develop children holistically
• Coaches should aim to develop children at various levels:
  ○ Technical
  ○ Tactical
  ○ Movement Skills
  ○ Physical
  ○ Social/Lifestyle
  ○ Life-Skills
• Sport can also provide lifecourse opportunities and experiences
	Although researchers – driven by their disciplinary instincts – remain largely focused on the development of particular characteristics (e.g. physiology (Lloyd & Oliver, 2012) and psychology (MacNamara & Collins, 2012)), more recent development models are increasingly working with notions of holistic development (e.g. García Bengoechea, 2002; Erickson, in press; Haskins, Jolly, & Lara-Bercial, 2011; North, 2009). This rationale has also been applied to conceptualisations of coaching effectiveness where the holistic development of the sport participant has been given similar value to increased performance (Côté & Gilbert, 2009)
	
	Recent studies have identified Physical, Psychological, Social, Technical and Tactical (PPSTT) characteristics of developing youth sport performers (North et al, 2014; 2016). Applied to all participants, and specially children, these PPSTT characteristics can also be understood as desirable and potential developmental outcomes of sport participation. From a holistic perspective, this is particularly relevant for psychological and social outcomes (Weiss & Wiese-Bjornstal, 2009).
	
	It is therefore increasingly acknowledged that coaches need to think about children as human beings – as individuals with their own histories, personalities, ideas, preferences, strengths and weaknesses (Erickson, in press). This approach need not only apply to elite or developing athletes, but to all sport participants. In fact, it has been argued that this is even more important with younger
		• The traditional remit of the children's coach as an 'activity leader' must be broadened
		• It is important for coaches to have a general idea of the capabilities they hope to develop in children and how these vary across different age groups to inform a progressive/spiral curriculum
		• Coach education must widen the curriculum to cover all these areas
		• Coaching programmes must specify what developmental outcomes they are trying to impact upon and how – purposeful planning and integrated delivery
		• The above must be done in a realistic manner, bearing in mind the expertise of the coach, contact-time, age/stage of development and youth athlete/parent expectations
		• Development of all these areas is not independent but interdependent and thus delivery must be integrated
		• Coaches must work with clubs and parents to agree and manage expectations and work collaboratively
		• Coaches must track development in all agreed areas for development. How this is done will vary according to expertise and resource.
		• Coaches must understand 'typical' developmental trajectories in each of the areas, developmental hierarchies, and interdependencies.

participants to guarantee their lifelong participation and interest in sport (Cóté & Erickson, 2015; Whitehead, 2011).

There are a range of theories and studies which suggest that if the coach focuses more on these human qualities then there is a greater chance of achieving both successful development and sporting performance (see, for example, Jones, Armour, & Potrac, 2004; Jowett, 2007). If coaches are enabling and supporting these development processes they need both disciplinary and multidisciplinary concepts and ideas to work with.

Various psychological and social developmental outcomes have been suggested in the literature. For instance, Weiss and Wiese-Bjornstall (2009), based on the work of Wiese-Bjornstall & LaVoi (2007) propose the following two sets of assets that can be obtained through physical activity:

Psychological Assets	Social Assets
Self-determined motivation toward physical activity	Support from significant adults and peers
Positive values toward physical activity	Feelings of social acceptance
Feelings of self-determination, autonomy, and choice	Close friendship and friendship quality
Positive identity, body image, and self-esteem	Leadership, teamwork, and cooperation
Perceived physical competence and self-efficacy	Respect, responsibility, courtesy, and integrity
	Sense of civic engagement and

Positive affect and stress relief Moral identity, empathy, and social perspective-taking Cognitive functioning and intellectual health Hope and optimism about the future	contribution to community Resistance to peer pressure to engage in risky behaviours	

Researchers and practitioners working from a holistic perspective have recently put forth different models of the psychosocial developmental outcomes that can be achieved through sport. One of the most popularly used to date is the 5Cs developed by Professor Richard Lerner and colleagues at Tufts University in the USA.

This work originates from developmental psychology and positive youth development. It is thus a strength-based approach focused on 'what young people can become, not what they are lacking' and 'sees young people not as problems to be managed, but resources to be developed' (Roth, Brooks-Gunn, Murray & Foster, 1998). This approach runs counter to the traditional deficit-based culture which considers children and young people as 'broken' or at risk of becoming 'broken' (Benson, 2003; Lerner, Alberts, Jelicic & Smith, 2005.

Lerner and collaborators have suggested a set of developmental characteristics/outcomes – the 5Cs: competence, confidence, connection, character, and caring/compassion (e.g. Lerner et al., 2005; Lerner, 2008). The premise of Lerner' model is that when

	children achieve higher levels of development in these areas, the make more positive and adaptive transitions through adolescence and into adulthood. In turn, this allows them to make greater contributions to themselves, their communities, and society in general. Some researchers and practitioners have suggested that youth sport programmes could and should be used to develop these 5C outcomes in sporting participants (Erickson, in press; Fraser-Thomas, Côté, & Deakin, 2005; García-Bengoechea, 2002; Haskins, 2010; Lara-Bercial, Jolly & Haskins, 2011). The 5Cs are becoming increasingly well known in sport and coaching in the US, Canada and the UK. The relevance of the 5Cs would appear to be in drawing coaches' attention to a wide range of development characteristics/outcomes for young participants and performers related to, but conceptually different from, the physical, psychological, social, technical and tactical characteristics traditionally identified earlier. In other words, it is another conceptual approach for thinking about holistic development. There is certainly overlap between the characteristics identified through the 5Cs and those proposed by the wider research literature notably on the psychological aspects of player development as desirable e.g. respect, humility and so on. The 5Cs information could be useful to children's coaches to explore this kind of thinking as long as it does not get confused with more disciplinary-focused approaches.	

	Similarly, various policy documents have suggested that sport c also be an important source of opportunities for young people to further their personal lives and professional careers. The International and European Sport Coaching Frameworks (ICCE, LBU, ASOIF, 2013; CoachLearn, 2017) refer to these as 'lifecourse competencies' and 'life experiences' respectively. These include for example, developing a greater network, learning about other cultural groups, or increasing one's own geographical boundaries and range. An additional area of interest relates to the development of life-skills through participation in sport. This is treated in detail in the following section 'Sport as a tool for personal development.'	

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Sport as a Tool for Personal Development		
Key Principles	**The Evidence**	**Impact for Coaching**
• Sport has physical benefits for children	• The literature provides evidence for the benefits of sport on children's physical health, for example (1) maintaining appropriate weight (2) enhancing the cardio vascular system and (3) protecting against psychological issues like depression (Andersen et al., 2011; Burnsnall, 2014; Fraser-Thomas et al., 2005; Fritz et al., 2010; Holt et al., 2011; Janssen et al., 2010; Kamijo et al., 2016; Koning et al., 2016; Thomas et al. 2008; Ubago-Guisado et al., 2016). However too much exercise or exercise delivered in the wrong way can also cause negative effects on physical child development. (Mitz et al. 2011; Vidal Conti et al., 2014; Steiner et al., 2000) • There is also evidence of the long-term effects of sport on the development of future healthy behaviours like smoking and drugs use (Castillo et al., 2007; Fraser-Thomas et al., 2005; McHale et al. 2005; Melnick et al., 2001; Taliaferro et al., 2010) • However, this evidence is somewhat confounded by the fact that different concepts of health are used in the literature. For instance, health can be a self-perceived measure (e.g. Gadermann 2015; Holt et al., 2011; Kirckaldy et al., 2002; Steiner et al., 2000) whereas on other occasions, health is measured by physical indicators. These indicators, however, also differ among different studies (running tests, blood pressure, BMI, muscular strength) (e.g. Andersen et al. 2011; Burnsnall, 2014; Fritz et al., 2010)	• Physical benefits last, only as long as the child is active. In order to develop a long-lasting enthusiasm for sport and physical activity in children, coaches have to develop attractive sport activities that are aimed at fun and are cognizant of child development principles. • Coaches are a role model for the development of healthy lifestyles and should therefore pay attention to how they represent the behaviours they want to see in the children they coach. • Coaches must ensure that all activities are developmentally appropriate and that children are never put at risk physically or emotionally.
• Sport has social/emotional benefits for children	• The literature also provides evidence of the beneficial effects of sport and physical activity on social and emotional child development. For	• Social and emotional benefits for children may result through sport participation, but

	example, self-image and self-esteem, perceptions of emotional well-being and self-efficacy (Alonso et al., 2002; Contreras Jordán et al., 2010; Donaldson et al., 2006; Hansen et al., 2003; Holder 2009; Kay, 2009; Kirkcaldy et al., 2002; Kulmatycki et al. 2005; Mc Carthy et al., 2008; McHale et al., 2005; Richman et al., 2000; Shaffer et al., 2006; Slutzki et al., 2009; Steiner et al., 2000; Roesch et al., 2009; Spruit et al., 2016; Yu et al., 2006) and social skills (Garcia-Lopez et al., 2012; Gombocz, 2005; Holt et al., 2009; Holt et al., 2011; Holt & Neely, 2011). • However, this beneficial effect must be carefully interpreted. The literature shows how it is dependent upon context and relations with others like peers, parents and coaches (Armour & Sandfort, 2013; Bruner at al., 2011; Coakley, 2011; Hartmann, 2003; Hartmann & Kwauk, 2011; Sandford et al, 2006; Rutten et al.,2007). Furthermore, benefits depend on the time that the child was involved (Armour & Sandfort, 2013; Contreras Jordán et al., 2010) and the perceived competences of the child (Donaldson et al., 2006) • Research determined a gender effect on the social and emotional development of the child (Fernández et al., 2010; Garcia-Lopez et al., 2012; Kulmatycki et al., 2005; Yu et al., 2006). • Benefits are not independent - changes in one area may affect others (Kovács et al., 2015). • Unfortunately, the literature also contains evidence in relation to the negative side of sport participation. Sport has been shown to lead to detrimental effects at a social and emotional level for children. Most of these effects are caused by negative experiences with coaches and peers (Fernández et al, 2010; Gombocz, 2005; Hansen et	are not guaranteed; good and positive relationships with peers and coaches are central conditions. Coaches should do everything in their power to prioritise the development of good relationships with children. • Coaches should be aware of the different impact of sport at emotional and social level mediated by time/intensity of engagement, gender, age and sport context. • Different developmental outcomes need to be seen as interconnected. Changes to one area may impact on another. Children's coaches should be aware of this and where possible use these interconnections to maximize the impact of developmental strategies. • Sport and the sport environment is also reported to be negatively correlated to social and emotional child development. Too much pressure, negative peer interactions or negative judgements may deprive children's self-image. Children's coaches should be aware of that risk.

	al., 2003; Liberal et al., 2014; Kulmatycki et al., 2005; Richman et al., 2000).	
• Sport has cognitive benefits for children	• It has been suggested that youths' involvement in physical activity is positively correlated with academic performance and cognitive development (Carson et al., 2016; Claddelas Pros et al., 2015; Efrat et al., 2011; Fraser-Thomas et al., 2005; Holt et al., 2011; Olivares et al., 2016; Spruit et al., 2016). Concrete tasks where sport has been shown to lead to an improvement include reproduction (Kay, 2009) and concentration (Taras, 2005). • Again, these positive effects of sport enrollment on academic performance have to be carefully interpreted and further research is needed to strengthen the results and clarify relations (Carson et al., 2016 Efrat et al., 2011; Taras, 2005) as these might be mediated by other concepts as self-esteem (Esteban-Cornejo et al., 2015; Yu et al., 2006). The majority of research establishes correlations, but it is far from establishing causation or explaining the generative mechanisms. • It seems, however, that the relationship between physical activity and academic performance is gender-dependent (Esteban-Cornejo et al., 2015; Yu et al., 2006), affected by the type of sport practiced (Esteban-Cornejo et al., 2015) and the amount and intensity of the activity (Esteban-Cornejo et al., 2015). • It is also important to recognized that academic performance and cognitive development has been conceptualized and measured in different ways: i.e., tests (Cladellas Pros, 2015; Spruit et al., 2016; Yu at	• Coaches must be aware of the unclear character of the relationship between physical activity and cognitive development.

• Sport can be a vehicle to learn life skills	al. 2006) and self-perception (Holt et al., 2011; Kay, 2009). • Research suggests that sport is a possible context for learning life skills (Fraser-Thomas et al, 2005; Hayball & Jones, 2016; Jones et al, 2009; Petitpas et al., 2005, Perks, 2007). However, this development does not occur automatically (Gould & Carson, 2008a). Coaches and how they plan and deliver sport play an important role in the development of life skills in sport (Cope et al., 2014; Trottier et al., 2014). • The transferability of life skills to other areas of life has also been highlighted as an important issue for researchers (Camiré et al., 2012; Gould and Carson, 2008b, Pierce et al, 2017, Turnnidge et al., 2014). Contrary to Gould and Carson (2008), Turnnidge et al argue that a certain element of transferability must occur even if life-skills are not taught explicitly. • Finally, it is important to consider that life skills concepts are multiform and not well defined and that therefore, further research is needed (Gould and Carson, 2008b)	• Coaches wishing to develop life skills in children must define what this means in their context and what enablers and constraints exist. • Whilst certain skills may develop naturally in children as a result of sport participation, others may need careful planning and delivery. • The transfer of skills from sport to other settings may not be automatic and coaches must provide opportunities for transfer to happen.

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Coaching Curriculum Development (with a focus on a specific sport)		
Key Principles	**The Evidence**	**Impact for coaching**
• When developing a coaching curriculum, especially for a particular sport, but also for multi-skills or fundamental movement skills, it is vital to determine what the core pillars of the sport are. This helps keep the focus on what is important	• *Determine what is important and keep this the simple focus of the curriculum over the long term.* The focus on core 'pillars' of a subject helps to define simple and clear objectives/outcomes for curricula. Research in sport and PE argues that sports can be categorised on the basis of common goals, rules and decisions, which define tactical problems and subsequent solutions. Curriculum design therefore starts with the definition of core problems and solutions (principles, skills and movements). Tertiary content (e.g. physical and psychological capacities) needs to be meaningfully related to the core (Bruner, 1960, 1977, 1966; Butler & McCahan, 2005; Mitchell, Oslin & Griffin, 2006; Penney et al., 2009; Siedentop, 2002; Rajan & Basch, 2012; Viciana & Mayora-Vega, 2016; Ward, 2012)	• Analyse the sport (or sports) and existing sport/game models in order to define the key components or pillars of a curriculum. • Keep the model simple. • Use the model to define the tactical problems/decisions participants will face frequently. • Align physical and psycho-social competencies with tactical and technical performance required.
• The coaching curriculum must be informed by what the participants are already capable of doing and shaped by their current stage of development	• An understanding of children's existing preconceptions, skills and ideas is necessary to calibrate the level of the material to be presented. Material must be presented in a manner consistent with the child's abilities and 'forms of thought'; in the form of workable models appropriate for the developmental stage. The challenge, therefore, is to formulate problems and activities that are appropriate to the child's present stage of 'game appreciation', even with very young children. This may entail radical reduction of tactical complexity by starting with less complex sport forms (e.g. target games) and/or reducing the number of problems presented in more complex sport forms (e.g. invasion games). The development of fundamental	• Spend time trying to understand participants' existing knowledge and ideas. • Identify where participants stand in relation to bio-psycho-social developmental stages • Translate the sport model into a form and language appropriate to the participants. • Design activities and games that present tactical problems at an appropriate level of complexity. • Align skills (even FMS) with the solution to specific problems, as identified in the model.

	movement skills (FMS) can still be achieved through games as long as they are designed appropriately and linked to decision-making (Bruner, 1960, 1977, 1966; Butler & McCahan, 2005; Ennis, 2015; National Research Council, 2000; Rajan & Basch, 2012; Ward, 2012)	
• Any curricula must be built in the shape of a 'spiral' where recurrent themes are regularly covered and expanded in depth and breadth to facilitate progression of the learner	• The shape and sequencing of curricula should be in the form of a 'spiral' with content matched to specific age/stage of the participant. The main themes (or problems) are arranged so as to recur with active reinforcement, seeking greater depth of understanding each time, within and across years. In a sport and PE context, this means the gradual introduction of tactical principles that are shared by sport forms, through the deliberate sampling of sports to encourage transfer of tactical principles and skills and, thus, deeper understanding and 'progressive formalisation' towards recognised sport participation. The progression needs to always be matched to the participants' physical and cognitive stage of development. Spacing between recurrences of themes should also be extended as children progress so that recall periods are longer. Topics should also be 'interleaved', with 'blocks' of work on a single topic (tactical principle or skill) to be avoided.	• Think very long term when designing outline curricula (i.e. 10 years or more) • Organise annual plans so as to cover fundamental themes with balance • Identify the main ideas, principles of play and technical progressions that enable learners to progress through the major stages of development in a sport • Use a range of sports, where possible, to expose participants to common problems, principles and skills to encourage tactical and technical transfer • Interleave curriculum themes and gradually increase the spacing between recurrences as participants mature
• Curricula should also be built with the notion of problem solving in mind.	• Take a problem-solving approach to curriculum design to help children develop their own solutions and to make skill acquisition more meaningful (i.e. skills are techniques applied to solve tactical problems in a given context). As participants progress through curricula, the problems posed by games and activities can become gradually more	• Start sessions by posing a tactical problem (i.e. a common decision-making situation) • Allow participants time to explore multiple solutions to the problem • Spent time categorising skills in alignment with particular tactical problems (e.g. dribbling/attacking space)

	complex and demanding of greater physical and technical effort and precision. Young people are more likely to engage with a curriculum that engages them in problem-solving that establishes self-reward sequences (i.e. master a skill to solve a problem, then use the skill to discover a more challenging problem and the mastery of a still more powerful skill). (Brune, 1966; Butler, 2006; Mitchell, Oslin & Griffin, 2006; National Research Council, 2000; Ward; 2012)	• Show how the mastery of skills creates new, more complex problems (e.g. new defensive skills lead to more complex attacking problems)
• The initial stages of curriculum design incorporate substantial research and reflection on the part of the designer	• Curriculum designers need to take a 'research and development' approach to the design process, maintaining a 'reflexive' approach to design and implementation. No research exists to help designers to match subject material to stage of development, accounting for individual differences. The entire design process is therefore an experiment, with ongoing judgements about the stage of learning, the appropriate material and mode of presentation to be made, tested and adjusted. Curricula are gradually refined but never perfected. This also means that any pre-existing curriculum resources need to be applied with care and understanding to specific contexts.	• Be clear that curricula are flexible frameworks to be used for planning but not set in stone • Collect data about how participants respond to different activities and concepts • Play with the challenge level (complexity) of activities • Always adapt pre-packaged resources to specific contextual needs, based on an understanding of the principles behind

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Planning		
Key Principles	**The Evidence**	**Impact for Coaching**

• Effective coaching children programmes are informed by meticulous planning
• Effective planning considers a set of nested goals (short, mid and long term)
• Effective planning ensures alignment between coaching activities, daily, short, medium and long-term goals and learning pedagogies and coach behaviours
• Planning is paramount to athlete and programme evaluation
• Planning is central to coach reflection, learning and development
	• Planning is probably the most important step of the coaching process (Robinson, 2015). Planning is central to guiding the journey of development we are taking children on. Planning, however, is not an exact science (Abraham et al, 2015), but it provides the framework for coaches to guide and influence development in the most effective way despite its relatively uncontrollable and unpredictable nature (Jones & Wallace, 2006; North, 2013).
	• The complexity of planning increases based on two factors (Abraham et al, 2015):
	  ○ The number of variables present.
	  ○ How far into the future we are looking to plan for.
	• Abraham and Collins (2011) have suggested that '*short terms cycles of development should be connected to medium term cycles, which are in turn connected to longer term cycles of development. In coaching terms, this would mean that a single coaching session should always have a connection to the longer term objectives'* (p. 20)
	• Abraham and Collins suggest that this approach will avoid the typical firefighting experienced by coaches and help them focus on the long-term development of the children they coach. They have termed this approach *'Nested Goal Setting and Planning'*
	• Therefore, planning happens over different time frames.
	• Muir et al. (2011) and Muir (2012) have used the notion of *'Constructive Alignment',* developed by Biggs (2003) to propose a way to develop and plan learning objectives. A clear understanding of what we want children to learn as a result of coaching is the first step of the process (Abraham et al., 2015). This exercise of practice needs analysis leads to the development of short, medium and long-term learning objectives from which a plan can start to emerge.
		• Coaches should develop short, medium and long-term coaching plans that help them guide children's development and better cope with the natural unpredictability and flow of development and of the environment
		• Coaches should always be able to establish a link between a coaching activity (drill, game, etc.), the session objectives and the short, mid and long-term objectives
		• Coaches should spend time analysing the needs of the children they coach and planning the most suitable pedagogical methods and coaching behaviours to achieve the sought outcomes.

	• However, having clear learning objectives is not enough. Coaches must create a learning environment that supports children to create their learning and to achieve their learning outcomes (Abraham et al., 2015).	
	• At a micro-level (session), this means the development of a practice structure (i.e., choice of pedagogy, choice of type of tasks, etc.) and series of coach behaviours (i.e., feedback, demonstrations, questioning, etc) which foster participant engagement and learning.	• Coaches need an awareness of different pedagogies and coaching methodologies and interventions to be able to build them into their plans
	• Researchers and practitioners agree that as part of the planning process, targets and assessment methods need to be put in place so coaches can evaluate to what extent the plan is working (Abraham et al., 2015; Gilbert, 2017; Muir et al., 2011)	• Coach should develop evaluation methods to assess the impact of their practice
	• Planning is helped by having appropriate templates that can guide coaches' thinking process as they plan. From this perspective, a planning template does not only remind coaches about what they want to work on with their participants, but about the things they should be thinking about. It can act as a 'check and challenge' tool for the coach (Abraham et al., 2015)	• Coaches should use existing planning templates or develop their own to suit their specific needs.
	• At the micro level, in terms of the things to think about when putting together session plan, Lynn (2010) proposes the following: ○ Session objectives ○ Session structure ○ Specific activities ○ Range of activities (variety) ○ Time for each activity ○ Likely feedback required ○ Equipment needed ○ Safety • Other elements include: ○ Number of participants ○ Age-range	• Session plans should take into account the following features: ○ Session objectives ○ Session structure ○ Specific activities ○ Range of activities (variety) ○ Time for each activity ○ Likely feedback required ○ Equipment needed ○ Safety ○ Number of participants ○ Age-range ○ Ability and experience range ○ Number of assistant coaches

	○ Ability and experience range ○ Number of assistant coaches • Abraham et al. (2015) also indicate that one of the main benefits of planning is that it can instigate and facilitate the reflection process of the coach and accelerate personal learning and development.	• Coaches should review their coaching plans to both evaluate progress and improve their practice

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4. Shaping the Environment & Building Relationships

Creating a Pedagogical Climate		
Key Principles	**The Evidence**	**Impact for Coaching**
• The term Pedagogy is typically ambiguous and a variety of definitions exist. Therefore, the term *'pedagogical climate'* has not one single theoretical framework accepted internationally.	• A pedagogical climate is a situation in which children and youngsters can develop themselves cognitively, socially, psychologically and/or physically and which holds educational values (i.e., the pedagogical perspective of sport and physical activity). • Sport has in this way an important socializing context for children and adolescents (Kay 2009; Light 2010), also referred to as the third pedagogical environment (Cotterell 1996; Dekovic 1999), next to home and school. • The dilemma as regards to the term '*pedagogy'* is that it does not have an unambiguous definition in the international literature (Tinning, 2012), and is used as a synonymous for terms as varied as education, teaching, instructions, and didactics. • The theoretical foundation of what is meant by 'a pedagogical climate' also differs in the literature as it can refer to motivational climate (Ryan & Deci, 2000; Duda 2005), caring climate (Fry et.al., 2012), and positive development-oriented climate (Fraser-Thomas et.al., 2005; Vella et.al., 2011). Different theoretical foundations can give different outcomes in interventions. Therefore, it is important that we define what comprises the pedagogical climate.	• Coaches must focus on and be able to create a sound pedagogical climate *Since there is no international agreement on the preferred terms, it seems that personal preference and local traditions (including national language differences) will continue to largely influence the choice of term* (in Tinning 2012, p.416) **Proposed definition of a Pedagogical Climate for ICOACHKIDS:** *A pedagogical climate is a safe learning climate where pleasure (fun) prevails, created by real experience of success, a good relationship between coaches and athletes which is based on mutual respect – in which one acts in the interest of (the development) of young individuals (with the aim of becoming the autonomous self* (Schipper -van Veldhoven, 2017, p.27)
• The development of a pedagogical climate must be intention driven	• A pedagogical climate refers to the way in which the intention from coaches to create favorable conditions for the personal and social development of young people is realized. Sport in itself does not immediately yield positive results, it depends largely on the way in which sport is	• Coaches need to have the intention to create a climate that can contribute to the development of children. The pedagogical climate starts with intent.

	offered (Bailey, 2006; Krouwel et.al., 2006; Schipper-van Veldhoven, 2013, 2017). • Thus, at the heart of the pedagogical mission lies the support of the personal and social development of children and young people, with the purpose of autonomy and self-determination (Onstenk, 2005).	
• The relationships between coach and child (pedagogical relationship) is central to the creation of a pedagogical climate.	• In this respect, the pedagogical relationship, the relationship between the educator (the coach) and the learner (the athlete), is of eminent importance to create a pedagogical climate (Kirk & Haerens, 2014). Factors influencing this include the educator's style of leadership, and the moral atmosphere which the educator espouses and expresses (Moget & Weber, 2007; Olympiou et.al. 2008).	• The key to creating a pedagogical sports environment is a good relationship between the coach and the young athletes (see values and beliefs in coaching)
• Fun is a key motivator for children to join sport programmes	• Fun is the number one motivation to practice sport. The most important factor to quit sports is: 'sport is not fun anymore' (NOC*NSF/GfK Athletes monitor, 2012). Thus, fun is an important determining factor of (continuous) sport participation. • Fun is also an important educational tool. The brain performs better in a 'positive emotional state' (LeDoux, 2002). • One factor leading to a fun experience is success, particularly when success is attributed to the individual capacities and supported by the social environment (Bloem & van der Toorn, 2008).	• Make sure sport is about fun via experiences of success (this is not the same as performance demands) and social support.
• A pedagogical climate is set with the child's best interest at heart. This is part of what has been termed an 'Athlete centred approach'.	• The main objective of 'athlete centered coaching' is to improve the *holistic* health and well-being of the athlete, via the objective of excellence in sports (Denison et.al., 2015, p.10).	• Coaching *children* who want to become great athletes or just want to have fun in sport • Being a child comes first, being an athlete is always second!

	• Sport has to benefit the young individual. In this respect, the educator / the coach is the advocate of the young individual. The aim is to assist them in becoming an autonomous adult (Buisman, 2002; Shields & Bredemeier, 2001). • Young individuals act and think differently to adults (Buisman & Middelkamp, 2001; Nelis & Stark, 2014). This specifically requires more knowledge about young individuals. • The young athlete is also an important actor himself (actively involved in their own education, learning process). From a pedagogical perspective, the focus is on the empowerment of the young individual (ICES et. al., 2015), also referred to as internal leadership (De Koning, 2009; Fransen et.al., 2014) • As Denison et.al. (2015) conclude: *Practice is less rosy. Many trainers/coaches are primarily task oriented. It requires a true change in leadership styles, coaching styles in sports which is dominated by sports results, in which power and abuse of power still take place at regular intervals. "Whether coaches would be receptive to real change remains to be seen" (ibid., p. 10).*	• Coaches need to have knowledge of the differences between age groups • An athlete-empowerment approach to coaching is a pre-condition to developing autonomous young people (and athletes).

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The Role of Motivation		
Key Principles	**The Evidence**	**Impact for Coaching**
• Mastery -oriented goals are more adaptable and lead to higher levels of intrinsic motivation, performance and sustained participation	• Research shows that in the main, human beings tend to understand competence or ability in one of two ways (Achievement Goal Theory, Ames, 1992; Quested & Duda, 2011): ○ **Mastery-Orientation:** competence is understood in a self-reference manner. From this perspective, I am happy when I improve myself (personal best mentality). ○ **Performance-Orientation:** competence is demonstrated only when beating others. I am happy when I prove I'm the best or very good at something (win at all cost mentality). • Children carry these 'thinking modes' around and research shows that which mode they favour has an impact on their behaviours, learning and coping strategies when doing sport. • Mastery-Oriented children tend to be happy when they try hard, when they improve on previous performance and tend to relish challenge and stick with tasks longer. Their self-confidence is more stable as a result. • Performance-Oriented children tend to only be happy when they feel superior, shy away from challenges where their competence may come into question and are affected by failure or poor results in a much more incapacitating way than their mastery-oriented companions. Their self-confidence fluctuates.	• Coaches must strive to set motivational climates where a mastery-orientation and self-determined motivation are fostered • Mageau and Vallerand (2003) propose seven autonomy-supportive behaviours that coaches can use in their practice: 1. Provide as much choice as possible within specific limits and rules; 2. Provide a rational for tasks, limits and rules; 3. Acknowledging other person's feeling 4. Allow opportunity to take initiative and do independent work; 5. Provide non-controlling competence feedback; 6. Avoid overt control and criticisms; 7. Prevent ego-involvement from taking place. • Coaches must work with children and parents to educate them around the impact of their motivational orientations and behaviours

• Coaches play a significant role in setting up the motivational climate that determines children's achievement goal orientations	• A mastery orientation is often associated with positive attitudes toward learning, positive emotions, effective study strategies and selection of challenging tasks. Also, children with mastery profiles show greater perceptions of physical competence, feeling happier and higher self-esteem (Atkins, Johnson and Petri, 2014). • Both perspective can co-exist in a child (i.e., the same child can at the same time be high in mastery and performance orientation). Research shows, however, that regardless of the performance score of the child, a high mastery score leads to more adaptive responses in the face of challenges and difficulties like the ones typically encountered when doing sport at any level (i.e., learning a skill or competing). • Importantly for coaches, research also shows that coaches' actions (and parents!) can have a great impact on the 'thinking mode' adopted by the child. This is called 'setting the motivational climate'. In other words, the sport participant goal orientation is determined by the interaction between their own goal orientation profile and the situation goal climate (Keegan et al, 2009). Understanding the factors that promote either orientation provides coaches with a number of strategies to add to their coaching toolkit. • **Coach Mastery-Oriented Behaviours:** o Focus on personal improvement and personal best o Focus on effort/process not result o Encouraging trying and promoting mistakes as learning opportunities o Fostering cooperation and collaboration rather than internal competition • **Coach Performance-Oriented Behaviours:** o Constant and public comparison between children o Focus on beating others o Focus on result over effort/process o Punishing for mistakes	

	○ Favouritism towards more capable children	
• Intrinsic and extrinsic self-determined motives lead to greater well-being, higher disposition to learn and more sustained engagement in sport	• One of the main roles of the children's coach is to keep children motivated and enthused about sport so they keep coming back for more and develop a lifelong love and habit for physical activity. Traditionally, when people speak about motivation they talk in quantitative terms (high or low), but in reality, what's more important is the quality of that motivation. The motivation to do something can be extrinsic or intrinsic and anything in between. ○ Intrinsic: 'I do it because I love it/enjoy it' ○ Identified: 'I do it because I understand the benefits of doing it' ○ Introjected: 'I do it because I feel I should' ○ Extrinsic: 'I do because I have to/for an external reward' ○ Amotivation: 'Don't know why I do it/Don't want to do it' • Intrinsic motivation in children results when an activity is pleasant in itself and brings them satisfaction derived only from their participation of this activity. • Extrinsic motivation, on the other hand, results when children participate in an activity for external outcomes that will occur from engaging in this activity (Mageau and Vallerand, 2003). • Two types of extrinsic motivation can be differentiated by the internalization process: self-determined and non-self-determined (Deci and Ryan, 2000). If extrinsic motivations are coherent with the children's value system, they become internalized and thus self-determined. • Self-Determination Theory (Deci and Ryan, 2000) proposes that the more an activity is carried out for intrinsic or self-determined extrinsic motivations, the more likely we are to stick with that activity. Intrinsic and self-determined	

• Coaches actions can contribute to generate climates that foster Autonomy, Relatedness and Competence	extrinsic motivations are thus believed to have a positive impact on children's well-being and motivation to learn and progress.
	• In a nutshell, SDT states that human behaviour, in the main, is driven by the need to satisfy three universal psychological needs:
	  ○ **Autonomy:** being able to function without needing (much) support and making own decisions.
	  ○ **Belonging:** feeling that one is part of something bigger that oneself and the sum of the parts.
	  ○ **Competence:** a sense of being capable of doing things which are valuable to us and those around us.
	• The level to which an activity addresses the need for any or all three of these basic human needs determines how intrinsically motivating this activity is to the individual in question or how 'self-determined' this individual becomes. When children and young people spend too long on the 'non-intrinsic' areas of motivation their behaviour, performance, effort, persistence and well-being tends to decrease.
	• Coaches can greatly impact on both the quality and quantity of the motivation of the children we coach. In turn, this leads to a number of choices and behaviours on their part that will impact on the quality and quantity of their participation, engagement and outcomes.
	  ○ **Autonomy** can be supported by using a facilitative/democratic coaching methodology that allows participants to have a say about what and how things are done where appropriate, by encouraging self-reflection allowing children to develop their own progress plans.
	  ○ **Relatedness** can be fostered by ensuring children feel welcome to the session, facilitating children getting to know each other, and support	

• Autonomy supportive behaviours on the part of the coach generate increases in intrinsic motivation	cooperative work between participants amongst other things. ○ **Competence** is about fostering the development of capabilities by setting tasks that are at the appropriate level so children can experience success and progressively improve. As we have seen, the more we keep children in the Learning Zone, the more competent they become. However, there is a couple of things we must look at around the development of competence that have the potential to be game-changers for the children we coach. • Mageau and Vallerand's motivational model (2003) propose key features of positive contexts for the coach-children relationship. In agreement with self-determination theory (Deci and Ryan, 2000), this model emphasizes the importance of the three central psychological needs of children: they need to feel connected to their social environment, autonomous in their actions and competent in what they undertake. The satisfaction of these three psychological needs is proposed as a necessary condition for self-motivation and positive development in sport, as in all other contexts. • Self-determination theory (Deci and Ryan, 2000) indicate that autonomy-supportive behaviours develop a social context which induce more self-determined motivation, well-being and healthy development. Moreover, Coatsworth and Conroy (2009) reported more level of enjoyment and satisfaction, achievement motivation, self-perception and goal involvement. They created an experiment with young members (10-18 old) of a swim club, which found that autonomy-supportive coach behaviours influence positively the children need satisfaction. More specifically, active autonomy-support strategies (e.g. coaches praising autonomous behaviour) are more benefit than passive autonomy-support strategies	

	(e.g. coaches expressing interest in young). Thus, expressing interest for children appear to be less important that praising a specific autonomous behaviour.	
• The impact of parents and peers in children's motivation in sport must be taken into account	• Children tend to favour mastery goals if their parents encourage learning, express satisfaction when they try something new, and if they see mistake as a part of learning process (Atkins and al., 2014) • The engagement behaviours of parents in children's sport may be perceived by the child as pressure or as support. Research shows that coaches attitudes impact on parental behaviour and on children's perceptions of it. Coaches' mastery orientations have been associated with parental support. On the other hand, a performance orientation has been linked to parental pressure (Dorsch, Smith, Dotterer, 2016). • Keegan and al. (2009) have shown that peers can influence the motivation of others through different types of behaviours: collaborative (e.g. develop confidence in others), competitive, altruistic (e.g. emotional support), and evaluative (e.g. rational feedback), but also by communication and social relationship. • Le Bars et al. (2009) showed that a peer-induced mastery-oriented climate was a positive predictor of adolescent athletes' continued participation.	

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Safeguarding and Protecting Children in Sport		
Key Principles	**The Evidence**	**Impact for Coaching**
• Mere participation in sport does not guarantee positive developmental outcomes and experiences. The good, the bad and the ugly co-exists in sport. For sport to be a positive experience it must happen in a particular way.	• The positive outcomes of sport are constantly alluded to. There is, however, a downside to participation too. And we are required to face that fact! We have to stop inappropriate behavior. Athletes at all levels of sport deserve to train and compete in a safe, healthy and stimulating sport environment (Brackenridge, Kay & Rhind, 2012). • Transgressive behavior occurs in all sports disciplines, with prevalence figures between 2 - 50%, mostly indicating that girls and elite athletes have a higher risk of unwanted behavior (Fasting et al; 2003; Fasting et.al., 2011; Kirby et al., 2000; Leahy et all., 2002; Vertommen et.al, 2015; Vertommen et.al., 2016). • Whilst in the last two decades research into the negative effects of sport participation has particularly paid attention to sexual harassment and abuse, there has recently been a broadening of the scope of research to include emotional abuse, corporal punishments, hazing, bullying and pressuring young athletes which may result in eating disorders, mental health issues and self-harm (Baar & Wubbels, 2013; Hughes & Leavey, 2012; Stafford & Fry, 2013; Stirling & Kerr, 2012). The negative side, the unsafe side of sport has become more visible as a result.	• Coaches must acknowledge the fact that there is a negative side to sport • Coaches must be aware of the broad range of threats to athlete integrity and well-being
• 'Safeguarding and Protecting' children in sport must be on the political agenda and resources made available to put it into practice	• Athlete welfare, child protection, safeguarding (youth) sport, ethics in sport have been on the agenda of (inter)national governments and sport organizations for the last two decades, primarily thanks to the attention that scientists drew to this topic and the extensive negative media attention on sports cases in the mid-nineties and more recently in the UK with incidents in soccer (Lang & Hartill, 2015). It is not	• Clubs, sport officials and coaches must make safeguarding a point of discussion in their clubs, teams, leagues, federations and develop strategies to prevent and respond to abuse.

	really a focus point in the practice of sport yet (David, 2004; Denison et.al., 2015; Serkei et al. 2012; Schipper-van Veldhoven, 2013). • Brackenridge considers as follows: *"the traditional autonomy of the sports sector has made governments reluctant to intervene in sport, resulting in a legacy of traditionalism and resistance to change, including making sport slower than other institutions to adopt social reforms for child welfare*" (in Lang & Hartill, 2015, page 2).	
• Three main actors/risk factors impact on children's sport experiences and wellbeing: the sports environment, the coach and the athlete	• The theoretical foundations and accompanying research with regards to transgressive behaviour in sport have primarily focused on three main actors/risk factors: the athlete, the coach and the sports environment. (Brackenridge, 2001; Cense, 1997; Cense & Brackenridge, 2001; Finkelhor, 1986; Gervis & Dunn, 2004; Harvey & Light, 2013; Kirby et al., 2000; Moget & Weber, 2008; Moget, et.al,, 2012; Stafford & Fry, 2013; Stirling & Kerr, 2012).	
The sports environment as risk factor	• The traditional values of sport (hierarchical position, personal influence, power of expertise, power based on the ability to give rewards and/ or to force someone to do something) can be a factor in the rise and continuation of (sexual) harassment in sport.	• Coaches must understand the culture of the sport and club in which they operate and its impact on safeguarding and protecting children.
The coach as risk factor	• *Grooming* (mostly related to sexual abuse) is the process in which the perpetrator (typically the coach, but it could be any other adult involved in the setting; Vertommen et.al., 2017) consciously plans and prepares the abuse. The perpetrator tries to gain trust from his chosen victim and to systematically break down the interpersonal boundaries. This process can take weeks, months and even years. • Knowledge by other adults of how grooming may take place is very important because it could look like the athlete "cooperates voluntarily" with the abuser. Younger athletes	• Coaches must have knowledge about the grooming process so they can spot signs and protect athletes against it.

	are extremely dependent from the adult/the situation and therefore very vulnerable in such a relationship/environment (Brackenridge, 2001; Fasting & Brackenridge, 2005; Finkelhor, 1986; Moget & Weber, 2007). • The power of a coach or authority figure over an athlete is very significant. Coach and athlete, certainly at the top level, spend a lot of time together. Coaches have a particularly great influence on athletes, often because they have access to all aspects of their life. The difference in power can cause a particularly large imbalance in the relationship, which in turn causes one greater potential risk of abuse. • Sport is a very physical activity, in which a coach may need to touch an athlete for instruction-related purposes. In most cases, this is because of safety considerations or to demonstrate a particular technique. Yet, this creates a culture of physicality and proximity in which the athlete may not always be able to decide what is acceptable behavior and what is not.	• Coaches require awareness of their own position of power and of how to protect their own integrity. • Coaches must be role models with regards to displaying desirable behaviours at all times (see personal philosophy and self-reflection)
The Athlete as risk factor	• Young ambitious elite athletes who spend many hours in sport every day are an extremely vulnerable group. For example, due to the power imbalance with the coach and other adults, and to the existences of vulnerable times and opportunities (i.e., 1 to 1 training moments, training camps abroad or trips to tournaments). For some athletes, the importance of sporting success and the pressure to perform at top is so great, that everything else takes second place. This could lead to a situation where a young athlete sees (Sexual) harassment as only a small price to pay on the road to sporting success and fame.	
The coach as most important person to maintain a safe sport environment	• The key requirement to create a safe, healthy and pedagogical sports environment is a good relationship between the coach/ trainer and the young athletes.	• Coaches must take responsibility to create safe sports climate and safeguard all athletes.

	(Claringbould, 2011; Hilhorst et.al 2014; Smoll & Smith, 2002). • Reflection on the values and principles of safeguarding is needed. Coaches have to take responsibility (Brackenridge, Kay, & Rhind, 2012; Baar & Wubbels, 2013) • Often the coach is in direct or indirect contact with several actors in the entourage (sports environment) thus able influencing the process of athlete protection (Romijn et.al., 2015; Schipper-van Veldhoven & Steenbergen, 2015).	• Coaches must also be aware of their own role and responsibilities to safeguard and protect children • Coaches must be able to detect signs of potential or existing unwanted behavior and to respond to threats to athlete integrity and well-being. • Reflective practice and athlete-empowerment approaches to coaching are great tools to promote safe sporting climates (see pedagogical climate) • Communication with board members and parents on 'how to we create a safe climate together' is crucial.

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5. Conducting Practice and Managing Competition

Learning Strategies		
Key Principles	**The Evidence**	**Impact for Coaching**
• Effective coaching is constructively aligned • Learning must be individualised and relevant to each child	• The process of constructive alignment begins with the question 'what do coaches want their participants to be able to know and do as a result of coaching?' The intended learning objectives that arise from an analysis of participants' needs relative to the sporting context become the basis for designing long, medium and short term plans that will enable these objectives to be achieved. • The principle of constructive alignment consists of: i) the needs of development of the participants, for example: external Standards (participant needs, development research, Government Sport, Clubs or Goals of Programme). ii) The constructive alignment relies on there being a learning environment that allows the learner to construct their learning to achieve learning outcomes. From this perspective, the coach is the catalyst for learning, but children create it iii) For this to happen, there needs to be alignment between micro, meso and macro cycle objectives and player engagement, coach behaviours, pedagogical choices and practice structure (Abraham et al., 2014). • The coach must be able to answer the WHO (are we coaching?), WHAT (are we trying to coach?) and HOW (are we trying to coach it?) questions (Abraham & Collins, 2011; Abraham et al., 2015; Muir et al., 2011). • In this regard, to assess the effectiveness of training, the coach must evaluate the transfer of children's behaviour from training to competition or to any kind of 'live' environment (Pinder et al., 2011)	• When planning, coaches must consider and provide alignment between practice structure and types, coach pedagogical behaviours, session structure, and objectives. Coaches must always consider and reflect on how the following parameters are used: goals, plans, drills, practices, communication and reflections. • Within this framework, the coach must also be able to answer the WHO (are we coaching?), WHAT (are we trying to coach?) and HOW (are we trying to coach it?) questions. • Coaches must build assessment into their practice to evaluate effectiveness.
• Effective coaching fosters initiative and creativity through	• Kidmann (2001) indicates that when coaches give power to athletes, allowing them to make better decisions and	• Coaches should promote children's cognitive engagement, ownership and hand

self-organised practices, promotes understanding through appropriate questioning and participant reflection	enhancing their long-term learning, athletes are motivated to participate to the best of their ability. • Along the same lines, Abraham & Collins (2011) have emphasised the need to promote athlete's understanding of both "what" and "why" to consciously involve the learner and foster long-term learning. • Less intervention from a coach has also been shown to lead to greater ownership by the athlete and, in more game-like situations, to more opportunities to test competence in real situations (Sagar & Jowett, 2012). • Coaches should use learning styles where they consciously involve the learner such as guided discovery and problem solving (Ramirez & Noguera, 1999) • Research shows that coaches should know and apply a combination of styles where "the child reproduces a model" and encourages the individualization, participation in the teaching-learning process as well as socialization where the main objective is based on values and respect for norms. In this way, "the child is involved in a cognitive way" using inquiry, search and reflection techniques, teaching methods based on guided discovery and problem solving are used (Ramirez & Noguera, 1999)	responsibility and decision-making to them when appropriate and safe. • Coaches must always promote children's understanding of what and why
• A combination of short- and long-term learning pedagogies should be used to promote skill-acquisition	• Abraham and Collins (2011) propose that different types of practice lead to different types of learning and are suitable for different types of learners: o Massed, blocked and structured practice generate short-term quick learning, are less mentally demanding and are suitable for beginners or for the early stages of skill acquisition o Random, variable and distributed practice lead to long-term learning, provide greater transfer to live situations and are more mentally demanding. This	• Coaches should use a combination of short- and long-term learning pedagogies that should be used to promote skill-acquisition

	type of practice is more suitable for the refinement and transfer stages. • The various types of practice are not mutually exclusive. To the contrary, coaches need to use a combination of these different methods available to them at different times to maximise learning and skill acquisition.	
• The balanced used of games and drills is necessary to develop skills in children	• Various practice models have been proposed in the literature to maximize skill learning. The Ecological Dynamics Approach to Skill Acquisition (Davids et al., 2013) is based on a sound understanding of: i) the expertise level of the performer on the task, ii) the intentions/goals to be understood, and iii) the primary constraints (organismic, task and environmental) • Other models like *Teaching Games for Understanding* (Bunker & Thorpe, 1982) or *Game Sense* (Den Duyn, 1997) among others, promote thinking players and foster initiative, creativity and autonomy in children increasing the motivation for the activity. • When using these types of 'game-based' approaches, a major challenge for coaches is to consider the functional representativeness of training exercises. That is, how well does the game represent a specific situation or principle of the sport to maximize learning in context (Pinder et al., 2011)	• Coaches should explore the balance between the use of games and drills to maximise skill development at different stages of development an in different aspects of the sport
• Feedback provision is important to promote skill learning • Effective coaching uses a wide range of feedback types and methods to suit children's stage of development and situation	• Feedback refers all the information available to a child in relation to the performance of a skill. Feedback can be internal/intrinsic (the child can access it without help: i.e., the feeling of the movement, the outcome (did the ball go in?), the sound of contact between ball and racquet, own breathing pattern, etc) or external/extrinsic (the child needs someone or something to get it: angle of joints, speed, etc). External feedback can also be called augmented feedback • Particularly with beginners or with complex skills, coaches may also need to enhance intrinsic feedback until the athlete	• Coaches must be aware of the different types of feedback and use it appropriately to meet the needs of children

	develops the skills/feeling to do it him/herself (i.e., through video, etc) • Well-developed observational skills are central to providing effective feedback (McMorris, 2015). This is because coaches have to be able to accurately determine which elements of performance require improvement and thus feedback (Farrow, D., in press). The coach must then decide which element that requires feedback is more salient and will offer a greater return once corrected (i.e., what needs fixing first) (Phillips et al., 2013). • With regards to the timing of feedback, research shows that the feedback delay (the time between performing the action and the feedback) does not make a difference to skill improvement. What the performer does between receiving the feedback and repeating the skill does have an impact. This is known as the interpolated activity and it can interfere with the ability of the performer to act on the feedback (McMorris, 2015). • What has been shown to also impact on the effectiveness of the feedback is the 'post-feedback delay' (the time between the feedback and the repetition of the skill). If this time is too short, the performer can't build a new mental model of the skill and progress halts (McMorris, 2015). • Feedback can also be prescriptive (i.e., 'next time do this') or descriptive (i.e., 'this is what you did'). Prescriptive feedback is useful for beginners who may find it difficult to find solutions by themselves. Descriptive feedback allows the child to attempt to work out by him/herself what the corrections have to be. A certain degree of expertise and introspection is necessary for this and hence this is recommended for more experienced athletes. (McMorris, 2015). • Coaches should give both informational and motivational feedback	• As a general rule of thumb, beginners should be given more frequent and specific feedback to help them develop their own 'internal feedback loops' over time • Before providing feedback, coaches should make sure they have appropriately observed the action and decide what elements require feedback and which one of those offers a greater 'return on investment' (i.e., will have a greater impact on performance once corrected). • Feedback should be provided at a time when the child can straight away attempt to correct the action. • Children should be given the time to build a new mental model of the skill they need to perform • Children need to be given a mix of prescriptive and descriptive feedback to suit their needs and to foster further development

	○ Informational feedback contains concrete information about what a child is doing and encourages adjustments on the next practice attempt through the use of instruction. ○ Motivation feedback serves as encouragement and may help to increase self-esteem but has limited impact otherwise. Coaches should avoid using only motivational feedback information because it (Abraham & Collins, 2011)	• Coaches can provide both informational and motivation feedback, yet they need to understand the benefits of each and not confuse them
	• The quantity and frequency of feedback given by the coach needs to be carefully considered. Abraham & Collins (2011) state that: ○ Too much feedback could result in overload and may cause a decrease in confidence to solve problems individually. More feedback encourages quick improvements as coach solves performance blocks ○ Less feedback may slow skill acquisition but can encourage player problem solving • One method to try and reduce the amount of feedback given to the athlete is the so-called 'bandwidth feedback' (McMorris, 2015). The coach decides on a bandwidth of acceptable performance of a skill (the parameters between which the skill is considered as acceptable). When the performance falls within those parameters the coach offers no correction. As the athlete becomes more experienced, the coach can narrow the bandwidth and thus require a more fine-tuned performance. • Anderson (1982) estimates that it takes 100 hours of learning activity to create a significant shift in cognitive knowledge and understanding. Therefore, coaches must respect children's pace of learning. Central to individualized learning are: ○ The relationship between coach and participants ○ The expectations/perceptions that those participants bring to the coaching environment and;	• Coaches must be aware of the quantity and frequency of the feedback they provide and the effect on the children they coach

	○ The creation of an effective skill acquisition environment (Sagar & Jowett, 2012).	

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The Role of Competition		
Key Principles	**The Evidence**	**Impact for Coaching**

• Competition plays an important role in participant development
  ○ It is developmental
  ○ It is motivational
• Competition must be developmentally appropriate to meet children's want/needs in terms of format, duration and ethos
  ○ Coaches can be flexible in how they organize competition, for example around selection year
  ○ Some activities can be too competitive
  ○ 'Developmentally appropriate' may include having no referee, and parents a long distance from the play area
  ○ Every child gets a chance to play regardless of their performance level
• Children rate their enjoyment of sport more based on coaches' and other stakeholders' appropriate behaviors than winning or loosing
• Despite the above, children often want to win in competition settings – so coaches and children need to know how to position winning and losing appropriately i.e. focus more on the process and keeping trying
• Children's enjoyment of competition might be different by gender
	• The importance of competition as a development tool has been highlighted in research (e.g. Abraham et al., 2014; Côté, Hancock, Turnnidge, & Vierimaa, 2013; Lyle, 1997; Sotiriadou, Shilbury, & Quick, 2008)
	• The importance of competition as a motivational tool has also been highlighted (Côté et al., 2013; Mulvihill, Rivers, & Aggleton, 2000)
	• Competition should be developmentally appropriate (Côté et al., 2013) – not over-emphasizing winning (Fraser-Thomas, Côté, & Deakin, 2008a, 2008b)
	• Shields and Bredemeier (2009) distinguish between 'true competition' (i.e., striving with someone for excellence) and 'decompetition' (devalued competition because of cheating, violence, taunting, etc). In true competition, children are encouraged to enjoy striving towards excellence.
	• Research suggests coaches should be flexible in the selection year, and in team rosters, between and in games to prevent one-sided games (Musch & Grondin, 2001)
	• Children's enjoyment, and evaluations of their coach were more strongly related to coaching behaviours than to their team's won-lost record (Cumming, Smoll, Smith, & Grossbard, 2007)
	• Compared to most boys, girls on average, tend to be less interested in competition (Mulvihill et al., 2000).
		• Coaches should use coaching as a developmental experience
		• Competition has to be appropriate to individuals, age/stage of development etc.
		• Although kids like to win, there should not be an over-emphasis on winning competitions in younger age-groups
		• Coaches should ensure that what children experience is 'true competition', not 'de-competition'.
		  ○ Emphasise effort over outcome
		  ○ Focus on enjoyment of the challenge of competition
		  ○ Recognise opposition as partner not enemies
		  ○ Stress respect for all involved (opponents, referees, parents, etc)
		• Understanding how to manage competition in children's development journeys is a key facet of coaching expertise.
		• Parental education is central to creating appropriate competitive environments

• Competition can be used to gain assessment information and participant progress • Competition must not be used to over-emphasize winning in younger age groupsNote: some children want to play sport but do not want to compete.	• Coaching can be used to assess participant progress (Salmela, 1995)	

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6. Reflecting and Learning

The Why and How of Reflection in Coaching		
Key Principles	**The Evidence**	**Impact for Coaching**
• Reflective practice is a central component of professional practice and learning • Expert and successful coaches continuously reflect on their practice • Reflection has to be framed within the coaches' overall philosophy, values and beliefs. Establishing to what degree practice and philosophy match is paramount. • Effective coaches reflect not only on the performance of their athletes, but most importantly on their own performance and develop plans to improve in key areas	• Expert practitioners take their strengths and weaknesses into account and make sure plans are in place to improve (Klein & Militello, 2005). From this perspective, if done correctly, reflective practice (RP) can help coaches develop a better understanding of their practice and help them chart their own development (Gilbourne, Marshall & Knowles, 2013; Lemyre et al (2007); Martindale & Collins, 2015). • All authors express the need for coaches and coach developers to recognise the value of reflective practice, particular when considering the limited amount of time coaches spend in formal coach education opportunities and how much they can learn from informal and non-formal situations (Moon, 2004) if underpinned by an effective reflective approach. • As Gilbert and Trudel suggest (2006) *'ten years of coaching without reflection is simply one year of coaching repeated ten times'* • Reflection should however, not be a box ticking exercise nor massively time consuming. It should be as a central element of effective practice (Martindale & Collins, 2015). • However, research shows that coverage of reflection in coach education is insufficient to develop reflective practitioners. (Knowles et al., 2001; Knowles et al., 2005). • Various types or modes of reflection have been proposed in the literature (Gilbert 2017; Gilbert &	• Coaches should have an open-mind. As their knowledge grows and they gain experience, their beliefs and values will change • Reflection is a learned skill. Coaches will get better at it with practice • Coaches should leave time and space to reflect after a coaching session, series of sessions, an event, a coaching challenge and after/before a season • A user-friendly model of reflection suitable for coaches of children should be adopted by ICOACHKIDS • The model of reflection should take account of the points outlined in the ICOACHKIDS Pledge

	Trudel, 2001; Martindale & Collins, 2015; Schön, 1983/1991; Martindale & Collins, 2015) ○ Reflecting on action: reflection based on previous events or on an analysis of performance gaps ○ Reflection in action: reflection during the actual event ○ Critical reflection: based on an analysis of broader issues like our values and philosophy • Martindale & Collins (2015) stressed the need for reflection to be guided by some key questions. They propose two avenues: ○ Structuring reflective questions around the Who-What-How model of coach decision making presented by Abraham et al. (2015) ○ Using an adaptation of Schön's (1983/1991) key reflective themes: ▪ Intuitive judgment ▪ Knowledge ▪ Decision-making ▪ Philosophy and context ▪ Role of the coach • Gilbourne et al. (2013) and Martens (2014) emphasise the need to prioritise critical reflection around philosophy, context and the role of the coach before meaningful reflection can start at other levels • Gilbert and Trudel (2001) put a structure on how youth coaches learn through experience and reflection: identify the problem; develop strategies; test it; adapt your practice. • Martindale and Collins (2015) note that coaches should also seek the views of their players, parents and other coaches in order to further aid reflection.	

	• Martindale and Collins (2015) and Gilbert (2017) have also stressed the value of networks of coaches and communities of practice to facilitate and enhance the power of reflective practice.	

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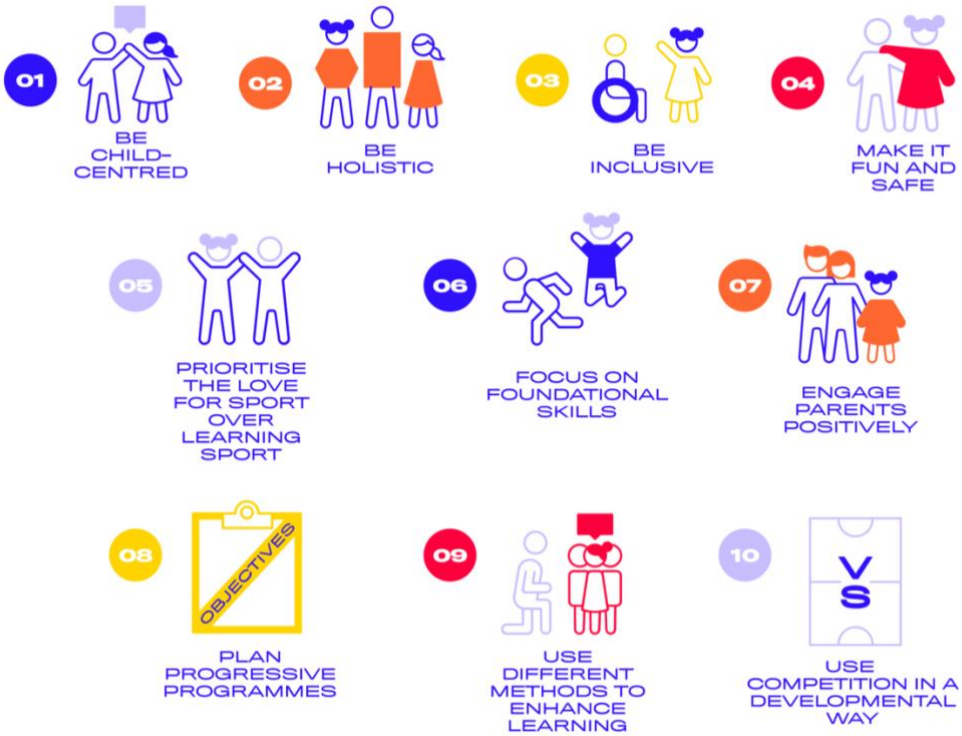
Conclusion

Research into children's sport and coaching has experienced a rapid growth in the last 20 years. A systematic review of this body of knowledge was outside the scope of this review. Instead, key areas of focus informed by the six primary functions of the coach (ICCE, ASOIF & LBU, 2013; Lara-Bercial et al., 2017) were identified by the iCK expert group.

The results of the review tend to corroborate the overall philosophy and values espoused by the iCK team, and the fundamental principles identified in the development of the proposed theory of children's coaching. Notwithstanding this, the review also found that much work is yet to be done to gather conclusive evidence in various areas. These include:

- Identifying the personal and social developmental outcomes naturally occurring from sport participation and the conditions that lead to them.
- Developing more naturalistic and developmental approaches to research in the area of skill acquisition.
- Providing a greater understanding of the experience of elite sport for young children and children with a high motivation to become elite athletes.

Nonetheless, in light of the findings of the review, the ICK expert group has developed the ICK Pledge which includes 10 Golden Rules for Coaching Children that coaches and sport clubs should adhere to in order to guarantee positive experiences.



We wish you the best of success.

The ICK Team

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