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British Weight Lifting Young People Review: The Development of Youth Athletes

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Preamble

This document is a critical review of the current processes associated with the development of youth athletes, providing insights into possible expansions necessary to support youth development in weightlifting, specifically as overseen by British Weight Lifting (BWL). The aim of this document is to outline and explain components associated with positive youth development, which could form the key elements of a proposed framework for the effective and appropriate development of youths in weightlifting. This review aims to be consistent with current scientific research and the principles of best practice, which may be implemented and delivered by qualified professionals working with youths in weightlifting.

There are at least three persuasive arguments in favour of BWL and its coaches' engagement with this area of participation:

- The market argument;
- The future argument;
- The public health argument.

The market argument refers to the observed increase in the popularity of weightlifting over the last few years, and specifically a growth of youth participation. Not only has access to clubs and competitions increased, but also the performances on national and international stages have significantly developed. These expansions represent a window of opportunity for the sport, and it is critical to consider seriously how best to meet this emerging need, and how to retain new participants, for the benefit of those participants and for the sport. The implication of this for BWL is that the organisation needs to be able to make a strong, attractive offer to a young person that is both appropriate and effective in the retention and development of athleticism, whilst supporting existing clubs.

The future argument expresses the view that the future of weightlifting, like any sport, is dependent on the sustained influx of new participants. Traditionally, weightlifting in the UK has been dominant by male adult participation. This has been

challenged in recent years from observations of competition entries and additional competition events, demonstrating the participation of females has increased substantially, whilst young people are provided greater exposure. The expansion of participation to include relatively large numbers of young people obviously increases the potential pool of participants overall. But, since past exercise behaviour is a reliable predictor of current activity status⁵⁷, an early introduction to weightlifting is likely to increase later engagement. However, one point of qualification needs to be acknowledged. The likelihood that exercise behaviours are maintained over time is significantly mediated by the quality of the associated experiences⁶. Differences in engagement in activities are partly a matter of a matched 'fit' between the individual and the activity. The resultant outcomes may create a 'virtuous cycle', where a young person who has a positive experience of weightlifting will be motivated to keep on doing it in the future, and seek out further positive experiences in the sport (whereas an individual who has negative experiences of weightlifting is more likely to drop-out or have limited future participation)². The implication of this for BWL is that the quality and values underpinning young people's early experiences of weightlifting are of enormous importance. Injuries can easily result in a negative sporting experience⁵². This can create a psychological barrier that can prevent further participation. An implication of this is that youth athletes should be trained for injury avoidance and resistance early, regularly, and appropriately.

Finally, the public-health argument relates to the social responsibility of BWL as a key sport in the UK. Reports from UK Active⁶⁰ and Public Health England⁵⁴ outline the consistent decline in physical activity across the nation. One in four adults fail to achieve 30mins of physical activity a week⁶⁰, whereas only 56% of adults manage to attain the recommended guideline of 150mins of physical activity a week⁵⁴. Furthermore, the British Heart Foundation National Centre^{14,15} note the decline of physical activity in young people, whilst Public Health England⁵⁴ report that only a 21% of boys and 16% of girls achieve the 60mins of physical activity a day recommendations. However, while physical activity levels have declined, participation rates in sport have slightly increased. In England, data show that in the four weeks prior to being interviewed, 81% of 5-10 year olds took part in sport

outside of school and 95% of 11-15 year olds took part in sport in or outside of school²⁶. So, it may be the case that organised sporting activities are able to off-set the reduction of general levels of physical activity, especially among children and young people⁸. Acknowledging this situation, BWL needs to be able to position itself as a leading organisation to meet a growing need to implement change.

These arguments suggest that there is a need to provide a resource explicitly for the development of youth weightlifters to encourage long-term participation and to reduce the risk of injury. There is increasing consensus among both scientists and leading practitioners that youth development should have as a priority the development of physical, cognitive, psychological and social development as a foundation of long-term health through a range of sports, games and activities^{9,20}. Evidence suggests that these early activities should be characterised by a spirit of inclusivity, enjoyment and participation^{2,11,21}, in order to:

- Increase the potential for a positive sporting experience that has been associated with continual participation;
- Fulfil recommended daily physical activity guidelines, with the least active and least skilled benefitting most from the programme;
- Lay the seed of an active lifestyle for long-term involvement in physical activity.

Kite, Lloyd and Hamill⁴⁴ constructed the BWL Position Statement on Youth Weightlifting, forming a rationale for the inclusion of weightlifting-specific activities for young people. The position statement provides details on the benefits of such activities, risk management, injury rate and a dispelling of the associated misconceptions. The present document looks to further expand on this, by providing insight of the suggested times to administer weightlifting specific training, and the administration of other forms of activities for the most effective and appropriate youth development, across a broader age range. Qualified professionals should look to implement such insights into their practices to allow for safe and effective training strategies. In addition, this review assists in dispelling common misconceptions,

providing parents or guardians reassurance that such activities are safe and appropriate for the healthy development of their children. The purpose of this document, therefore, is to supplement the Position Statement by offering guidance on the physical activity and development of young people, underpinned by peer-reviewed research studies.

BWL's vision is to educate and inform qualified professionals, by providing clear guidance for increased long-term health and wellbeing for youth, whilst enhancing sporting experience through age-appropriate mechanisms, potentially resulting in a contribution to reduced sporting drop-out, and increased inclusivity within sport. This proposal of a 'Young People Offer' provides young people-specific guidance for the healthy development of potential weightlifters.

Child Development: Physical literacy

The concept of physical literacy forms the foundation and character of the approach proposed in this paper. Physical literacy has become an increasingly influential idea in sport, physical education and physical activity promotion, including among those working within athlete development^{59,63}. It has been interpreted and defined in several ways^{29,55}, and because of this variation in understanding, it is necessary for us to develop our own definition and concept.

At its core, physical literacy is some sort of capacity to move well. So, physical literacy assumes basic movement competence and skill, and the associated psychological and social wherewithal to improve and develop. By implication, the use of the word 'literacy' implies the ability to identify, understand, interpret, create, respond effectively and communicate through the physical medium; through movement⁶¹. Margaret Whitehead⁶⁴, who popularised the term physical literacy, described physical literacy as *"the ability to identify, understand, interpret, create, respond effectively and communicate, using the embodied human dimension, within a wide range of situations and contexts"* (p. 26). She included within her definition: behavioural, psychological and physical components of physical literacy. Psychological correlates include perceived competence, enjoyment and belief that

engaging in physical pursuits is worthwhile. Behavioural characteristics, such as goal setting, imagery and reflection, appear to play a crucial role in the realisation of potential by enabling individuals to invest the requisite time to practice, avoid distractions, and stay committed to pursuing personal excellence in physical activity throughout life. Physical aspects relate to both the range and quality of movements with which individuals engage. Although distinct, the components of physical literacy are closely inter-linked (e.g., physical skills are required to utilise psychological and behavioural elements of physical literacy, and vice versa). The appropriate development of these components, it is suggested, leads to the physically literate individual.

This model has several advantages over competing models, such as that adopted by Canadian Sport for Life⁴⁰. First, most accounts of physical literacy focus almost exclusively on the development of fundamental movement skills. These skills are obviously very important, but it is now well established that effective participant development requires consideration of psychological and social aspects too^{9,34}. Second, Whitehead's concept of physical literacy is not context-specific. Some approaches to movement development (such as Long-term Athlete Development) have focused almost entirely on sports settings, whilst others have been primarily concerned with schools. Physical literacy offers a way of bridging the gap between these settings because it is fundamentally concerned with their shared outcomes.

A challenge facing sports organisations, however, is that the language and ideas used to explain physical literacy are often ambiguous, and do not necessarily lend themselves to practical implementation. What, for example, is '*the embodied human dimension*' and how might coaches support it? How does a coach use these ideas in a coherent and progressive way? Importantly, how can we explain and operationalise physical literacy to coaches without dumbing it down to the point of being meaningless⁴? Without answers to these sorts of questions, there is a danger of physical literacy being little more than an appealing, and an unworkable new term.

So, to operationalise physical literacy, it will be necessary to make it more concrete

and accessible. To do this, the following framework will be used, which is based on the OECD's internationally validated framework of key competencies⁵⁶:

- **Knowledge:** facts or ideas acquired by study, investigation, observation, or experience and refers to a body of information that is understood.
- **Skills:** the ability to use one's knowledge with relative ease to perform simple and complex tasks.
- **Attitudes and Values:** a self-belief of desirable goals that should be strived to attain. Interlinked with characteristics inherently believed to be appropriate in a given circumstance.

According to this view, physical literacy is the holistic combination of the Knowledge, Skills and Attitudes / Values used to meet the demands of different settings. This has a number of advantages over earlier approaches: it is more explicit and clearer about what is involved with physical literacy; breaks down its key elements, and offers a way of understanding its progression. Within the context of weightlifting, physical literacy might be operationalised as follows:

Early Childhood (4-7yrs)	Later Childhood (7-10/11yrs)	Early Adolescence (10/11-14yrs)
<ul style="list-style-type: none"> • Knowledge <ul style="list-style-type: none"> • <i>knowledge of the body and its parts</i> • <i>awareness of the body in movement</i> • Skills <ul style="list-style-type: none"> • <i>ability to play with others</i> • <i>basic movement skills</i> • Attitudes & Values <ul style="list-style-type: none"> • <i>joy of movement</i> • <i>appreciate the importance of physical activity and movement in their lives</i> • <i>respect of others</i> 	<ul style="list-style-type: none"> • Knowledge <ul style="list-style-type: none"> • <i>understanding of rules and roles of basic sports</i> • <i>knowledge of the effects of exercise on the body</i> • Skills <ul style="list-style-type: none"> • <i>specific movement skills</i> • <i>basic weight-carrying skills</i> • <i>teamwork</i> • Attitudes & Values <ul style="list-style-type: none"> • <i>growth mindset</i> • <i>social engagement</i> • <i>respect of others</i> • <i>responsibility of actions</i> 	<ul style="list-style-type: none"> • Knowledge <ul style="list-style-type: none"> • <i>understanding and acknowledgement of sport specific rules and regulations</i> • <i>principles of strength training and recovery</i> • <i>principles of self-reflection</i> • <i>principles of health and wellbeing</i> • Skills <ul style="list-style-type: none"> • <i>complex weight-carrying skills</i> • <i>basic reflective skills</i> • <i>leadership skills</i> • Attitudes & Values <ul style="list-style-type: none"> • <i>commitment to practice</i> • <i>proactive engagement in self-development</i> • <i>basic competitive mindset</i> • <i>appreciation and value of role models</i>

Table 1: Physical literacy during childhood and early adolescence

Some interpretations of physical literacy focus almost entirely on the development of physical competencies such as fundamental movement skills (FMS), the motor development of basic athletic ability⁴. Virtually all models frame physical literacy in terms of the competences required as a precursor to more advanced skills that are inherent parts of playing, games and sports⁵¹. FMS are important, of course. They are an essential part of any youth sport development programme and have featured as a key component in numerous well-known development models at varying stages^{13,47}. The development of FMS is associated with adolescent and adult activity levels^{10,39,45}. So, it is essential to revisit FMS development continually to ensure no loss of ability occurs during the adolescent process⁴⁷. The tripartite model of physical literacy suggested here presents one coherent way of positioning these skills (as well as their associated knowledge, attitudes and values) within the developmental trajectory of the young weightlifter.

Physical literacy is a useful phrase to capture the complex web of knowledge, skills, attitudes and values that underlie positive physical activity experiences, during youth and throughout later life. It is more than the ability to merely express physical competency, and acknowledges the psychological and social aspects of engagement that have been typically overlooked by other frameworks²⁹.

From the above information, BWL believes that a holistic approach like this will provide a more relevant and positive experience for youth because greater clarity for qualified professionals will allow for further understanding towards content delivery, to not only focus on physical skill development, but also cognitive, psychological and social factors. This will result in young people developing greater confidence in their ability, raised self-esteem and more incentives to continually participate in games, sports and activities, whilst allowing for progressive development of cognitive and physical competencies, and the growth of the sport.

Early Specialisation

A common approach to sporting success that gained particular popularity following the perceptions of Olympic successes of the Eastern Bloc countries in the 1960s and

1970s is the strategy of training young children in adult-type of training environments⁷. In more recent years, “starting them young” has received renewed interest as a way of increasing the window of time to develop mastery within a specific sport. This idea is generally called “early specialisation”⁴⁹. In some instances, this notion has been extrapolated from psychological research suggesting that an average of 10,000 hours is necessary to achieve expertise in one domain³⁰, to unsupported and potentially harmful claims of a ‘10,000 hours rule’³⁵. While there is no doubt that extensive practice is usually necessary for high-level performance in any domain, the exact figure of 10,000 hours has largely been discredited^{25,38}. Nevertheless, the 10,000-hour concept continues to influence coaches and sports administrators. Other factors that seem to promote the idea of early specialisation include the pursuit of athletic scholarships, social prestige and financial security that accompanies elite sporting status, an obvious attraction for any parent or child^{7,49}.

Early specialisation is usually understood to be a focus on one sport for performance enhancement, at the expense of all others, starting from a young age (defined in this paper as under 11 years, although, in practice, as young as 3 or four years of age in some sports). Bailey’s⁷ summary of the common characteristics of early specialisation is shown in Table 2.

An alternative to early specialisation is early diversification, where an athlete is exposed to a number of sports and activities, with the aim of developing a broad base of skills. In this case, there is no focus on one sport, and activities are often presented in an unstructured format, encouraging what is sometimes called ‘deliberate play’²¹. Evidence suggests that early diversification results in a strong foundation of movement skills, and a stronger preparation for late adolescents to undergo intense specialisation training^{37,50}. Most experts associate early diversification with the development of physical literacy^{55,59}.

To date, the case in favour of early specialisation over early diversification is weak^{7,50}, and it is evident in a number of studies that early specialisation results in

Table.2**Characteristics of early specialisation in sports.**

1. High-volume, intensity and duration of practice;
2. Beginning at an early age, usually during elementary school;
3. Focusing on one specific activity, to the exclusion of others;
4. Often (but not always) initiated by adults;
5. With the goal of elite success.

Characteristics of early specialisation, reproduced from Bailey⁷.

fractional amounts of success^{49,53}. Guellich & Emrich³⁷ noted that 64% of international finalists have been involved in other sports, with every seventh top athlete commonly participating long term (6.8 ± 4.8 yrs), providing evidence of successful late specialisation. They also concluded that success and training frequency of early specialisation provided little-to-no probability of success in later top-level sport. In addition, several studies have reported that early specialisation is associated with increased risk of injury and increased drop-out of sporting participation altogether^{20,27}. Specific concerns relate to the potential for burn-out following an intensive, year-round training programme, frequently resulting in drop-out or injury⁵². Overuse injury has been highlighted as a major worry to youths involved in early specialisation, as increase of skill and intensity results in the increase of injury risk^{36,42}. Overuse injury seems to be more likely in early specialisation, due to factors like high intensity exercises in training and competition, extended playing season, inappropriate technique for skills, and competitive demands that are not consistent with a child's development status³⁶.

Lack of fun and enjoyment are also common reasons for drop-out⁶², and following an intensive programme there are increased risks of neglecting these motivators for

youth. Visek et. al⁶² offered a framework providing a 4-pillar system arisen from fun-determinants, which focus around *fundamental* principles; “Being a Good Sport” (Social), “Trying Hard” (Internal), “Positive Coaching” (External) and “Practices / Games” (Contextual). This provides an evidence-based framework for promoting sustainability of youth sporting participation, which can be applied across multiple disciplines. It is evident that motives for youths should surround the enjoyment of participation, and not the pressures of performance. This further exacerbates a key area lacking from the early specialisation model.

Whether the long-term goal is competitive success or health-enhancing physical activity, BWL maintains that early specialisation is an unnecessary path, and that it is neither effective nor appropriate. Instead, youth development in sport should have as its priority; the development of physical, cognitive, psychological and social abilities for long-term health through a range of sports, games and activities in a low-structured format. Consequently, the BWL Young People Offer will not be focused on weightlifting-specific development, but the development of physical-literacy in all young people that will offer an advantage for health, learning and sporting experience that promotes sustainability for later life.

Current Models of Athletic Development

At present, there are a number of well-known models for youth athlete development. The purpose of these models is to provide an overview of how the development sequence will progress as youths mature, which offers a clear guidance and structure to allow for the efficient development of youths.

The Long-term Athlete Development model (LTAD) was the first widely adopted framework for development in sport¹³. The LTAD offers a practical framework for youths to train from early age, through adolescence and into adulthood. It has 7 stages:

- Stage 1: **Active Start** (0-6 years)
- Stage 2: **FUNdamentals** (girls 6-8, boys 6-9)
- Stage 3: **Learn to Train** (girls 8-11, boys 9-12)
- Stage 4: **Train to Train** (girls 11-15, boys 12-16)
- Stage 5: **Train to Compete** (girls 15-21, boys 16-23)
- Stage 6: **Train to Win** (girls 18+, boys 19+)
- Stage 7: **Active for Life** (any age participant)

One important virtue of the LTAD is that it highlights the distinctive needs of the sports process. Another is that it promotes a gradual introduction to serious training, and consequently presents an alternative to the early immersion into intensive training that is characteristic of early specialisation.

The LTAD is probably the most commonly known model of development. However, it has received generally negative reviews from scientists^{9,31,46,48}. Lloyd et. al⁴⁸ address a number of issues within the model, such as inclusion concerns, whilst others highlight that the model still leaves room for early specialisation. From the perspective of this paper, another important criticism of the LTAD is that it is almost entirely focused on the development of physical competency and physical qualities, and therefore ignores behavioural, psychological and social factors that are equally important within the development process.

So, while the LTAD does produce a useful framework that highlights the importance of the maturation process of youths, its limitations mean that it is inadequate as a conceptual framework for BWL's Young People Offer.

While the LTAD offers a physical-centred approach to player development, the Developmental Model of Sporting Participation (DMSP) starts with the psychological, social, and behavioural aspects²¹. This model is useful, in particular for its insights into the pathways of progressions for youths into adulthood that can potentially lead to elite performance (Figure.1). The DMSP posits three phases of development: sampling phase; specialising phase; and the investment phase¹⁹. In the sampling

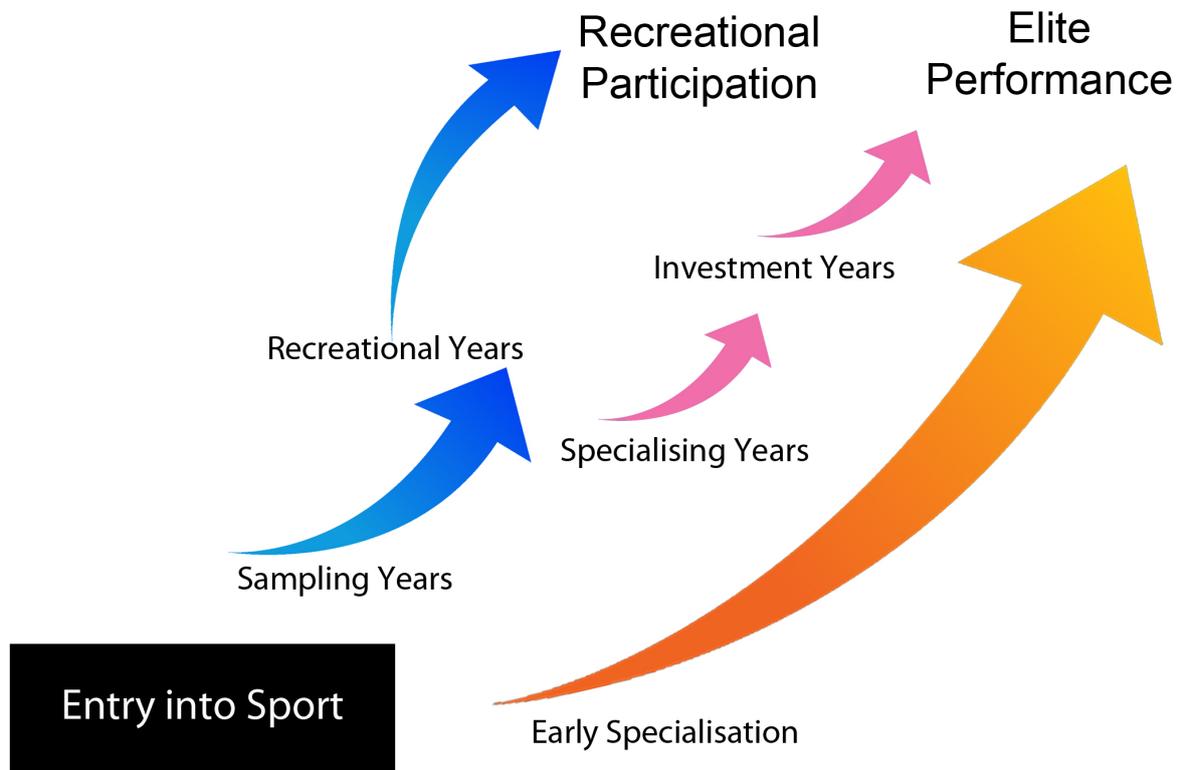


Figure 1. The adapted Developmental Model of Sporting Participation¹⁸. Entry into sport can lead to the routes of; sampling years and then either recreation years or the specialising and investment years, or through early specialisation without sampling.

years (aged 6-12) it is recommended that children get the opportunity to sample a range of different activities and sports in a way that promotes fun and enjoyment¹⁸. As a child moves into the specialising years (aged 13-16) they start to become engaged in only two or three sports with the emphasis moving from deliberate play to deliberate practice. Finally, the now adolescent athlete moves into the investment years (aged 17+), which are characterised by a focus on only one sport in a competitive environment. However, these ages resemble the different transition points of the Canadian school system, leading to Bailey et. al⁹ questioning the literal applicability of these stages in a UK context. The model also demonstrates the observations of how recreational athletes develop, whilst also the more controversial mechanism of early specialisation, which notably lacks the elements of sampling or investing, and specialises from the immediate engagement of sport.

The DMSP provides a useful overview of pathways in sport, and it offers a constructive plausible alternative to early specialisation. In a review of the DMSP, Côté & Vierimaa²¹ state that specialisation is not appropriate for most athletes before the age of 16 years. Importantly, it is consistent with children's motives for taking part in sport, as well as maintaining and developing children's sporting ability as they move through the developmental stages. Certainly, an approach whereby 'success' is defined by skill development, over winning, is something that coaches need to become aware of and promote¹. Its weakness, however, is its focus on psychosocial concerns at the expense of consideration for the physical aspects of sports development.

A third model for youth development is the Youth Physical Development model (YPD), produced by Lloyd & Oliver⁴⁷. Figure 3 shows how the YPD allows for the development of physical abilities throughout childhood, adolescence and into adulthood. Although similar to the LTAD, especially with the utilisation of physiological markers of growth as an indication of maturation status, it includes a variety of additional physical qualities for development and different placements on training emphasis' across ages. It is important to note that the YPD model has a strong emphasis on FMS development from early years through to maturation stages, when they can start to include sport specific learning alongside FMS⁴⁶. The YPD also considers gender differences and the stages of developments per gender, with allowances for early and late maturing youths. This highlights that females and males have differences in maturation ages, with a given amount of flexibility, which must be employed into development programmes⁴⁶. In some ways, therefore, the YPD can be considered a more opt-to-date and empirically based version of the LTAD.

From the perspective of this paper, it is interesting to note that Lloyd et. al⁴⁸ went on to reproduce the YPD as an adapted model of the DMSP; the Composite Youth



Chronological Age	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21+	
Structure	Unstructured			Low Structure				Moderate Structure				High Structure			V.High Structure						
Talent Development	Investment Years					Sampling Years						Recreation or Specializing Years									
Pyscho-Social Development	Exploration & Social Interaction				Peer Relationships, Empowerment, Self-esteem						Self Worth, Self Confidence or Sport Specific Psychological Skills										
Male Qualities	FMS	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Sport Specific Skills	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Mobility	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Agility	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Speed	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Power	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Strength	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Hypertrophy	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
	Endurance	Light Blue			Medium Blue				Dark Blue				Very Dark Blue			Darkest Blue					
Female Qualities	FMS	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Sport Specific Skills	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Mobility	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Agility	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Speed	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Power	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Strength	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Hypertrophy	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					
	Endurance	Light Pink			Medium Pink				Dark Pink				Very Dark Pink			Darkest Pink					

Note: Within the qualities, the darker the colour the greater the emphasis required for training / importance for development

Figure 2. Adapted model of the YPD and CYD models by Lloyd et. al⁴⁸ and Lloyd & Oliver⁴⁶.

Development model (CYD). The CYD offers a combined physical, talent and psycho-social development pathways to provide a more holistic development of youth⁴⁸. It is noteworthy that Lloyd et. al⁴⁸ used the same structure and principles as the DMSP with its stages of development, but adapted the order of the wording due to their beliefs of terminology interpretation: Investment Years, Sampling Years and then either Recreational or Specializing Years. Figure 2 shows the pathway for the CYD model.

It is undeniable that each of these frameworks capture some important aspects of youth development. The LTAD, although heavily criticised, offers a framework of development broken into stages of maturation. It also uses markers of maturation, which have been found to form a useful assessment tool. The validity of the “windows of opportunity” is still yet to be fully researched, but it is clear that an

emphasis of training can be employed, much like that provided in the YPD model. The YPD offers a framework that is more individualized,

and takes into account different rates of maturation. It does not neglect important aspect of training and encourages the continual development of all physical qualities, some of which will have a greater priority at set intervals of maturation. The DMSP provides a clear overview of the routes into both recreation and elite sports participation from a variety of ages. Not only this, the DMSP is a critical reminder that play and unstructured activities are the important elements of early positive sporting experiences. Each of these factors needs be considered when developing programs and frameworks for youth.

Common Themes of Practice

Across the country there will be a number of initiatives being implemented to encourage the growth within sport, whether this be through performance or participation. This will be implemented by local sports organisations, government funded bodies such as county sport partners, educational institutions and, of course, the national governing body (NGB) for sporting disciplines. The NGB should play a role in increasing both growth and performance of the sport. Typically, most NGBs will provide a “young people” offer focusing on engaging with youths to expose them to individual sports, in the hopes that they will continue participation through to later life. Upon a review of a number of NGB offers, it seems apparent that most propose a diluted approach of the adult sport; therefore, creating a backward developing sport that is not youth-centred.

NGBs will usually provide a framework for performance development in youths, directly associated within their talent and the performance pathways (commonly integrated). Through a scientific review of current NGB performance pathways, it is clear to see a general advocacy towards long-term approaches, grounded in physical literacy¹⁶. However, there is a danger that NGBs lack the holistic approach to athlete development and tend to focus on one characteristic at the expense of wider developments of athletes²¹. If the aims of performance pathways are to identify

and develop future potential athletes from a young age, this highlights a problematic approach. Although the intentions of NGBs would commonly be for the development of a performance outcome, it is evident from the information provided within this document, that a sole focus on sporting performance is insufficient and inappropriate for the development of youths.

Other organisations have recognised the need for the development of physical activity, FMS and physical literacy, and it is evident that programmes and initiatives are currently being created to promote this. Public Health England⁵⁴ released a number of initiatives with Active4Life to promote active lifestyles for both youths and adults through a number of mechanisms. A number of Welsh representative bodies have also demonstrated success in a variety of initiatives focused on physical literacy within education, with positive research reviews^{24,58}. Physical literacy and physical activity has been found to have positive effects on concentration levels, as well as memory assessments, in young school children, suggesting that a bi-product of a more physically active individual may be an enhanced learning development all-round¹⁷.

Therefore, BWL advise steering away from the development of a watered-down version of weightlifting to prevent any advocacy of early specialisation. It is not appropriate and potentially unethical to use an adult framework that is then reduced or regressed to assumedly fulfil youth requirements. Instead BWL recognise that a framework requires a youth-centred approach that develops athleticism over specialism, by providing an effective and progressive development of FMS and physical literacy, with a later adoption of sport specific skill development. It is also of note that engagement of physical activity may encourage enhanced learning, so opportunities to partake in sport during extracurricular times (breaks and after school) may benefit the individuals learning, regardless of the sport and activity.

Barriers

It is essential to acknowledge any barriers that will prevent participation within sport, or conversely any criterion that is vital for retention in sport. Facilitators, cultural

beliefs and social stereotypes each play key roles that can either encourage participation or withdrawal, which are critical to discuss to allow for the continual participation of youths, through raising awareness and the removal of negative experiences.

The family plays a crucial role as a facilitator for sports participation, acting as an essential support unit to children⁴³. Without this support, the youth is unlikely to attain representative sporting levels. Additionally, with the presence of parental support, deeper relationships may develop between child and parent due to sporting participation. This has been reported as an element of a positive sporting experience³², with an increased potential for sporting retention. It is of note that athletes who encounter pressures to succeed from parents result in further negative experiences⁵, therefore it requires a fine balance of encouraging youths to partake in a sport of their choosing without placing too high an expectation to succeed. Enjoyment is the desired outcome.

Similarly to parents, qualified professionals such as coaches, also play an essential facilitator role. Coaches must facilitate play and maintain enjoyable experiences until appropriate to progress by introducing more specific types of training alongside play³³. Sessions should still be an enjoyable, motivating and rewarding experience for any athlete. Although it is apparent that a coach will provide activities, guidance and feedback for continual development, it is often neglected that the coach plays more than just a practical role. Coaches need to engage with their athletes, understand and maintain effective feedback, and provide an environment that is encouraging and appropriate, to allow for a positive sporting experience³². The environment that is created can steer an athlete's experience, and in some instances, it can deflect potentially negative outcomes, such as parental pressures²⁸. Hence, it is important that coaches acknowledge the psychological requirements as a coach, and not just focus on physical elements. Fraser-Thomas & Côté³² gathered information from an athlete review of positive and negative coaching experiences, which has been summarised in table 3.

Table.3

Positive Experiences	Negative Experiences
<ul style="list-style-type: none"> • Belief of athlete such as setting and achieving goals, potentially with time pressures. • Positive reinforcement; encouragement, enthusiasm & positive focus. • Athlete engagement: communication, connection, role models, etc. 	<ul style="list-style-type: none"> • Intimidating demeanour. • Favouritism. • Demonstration of inappropriate behaviours.

A summary of the positive and negative coaching experiences of athlete development, taken from Fraser-Thomas & Côté³².

Enjoyment and social interaction are key motives for youths to engage in physical activity. However, barriers may present themselves outside of these areas, such as conforming to social stereotypes. It is evident that such issues are greatest among teenage girls, although they are not limited to them, and have been demonstrated to be a significant restriction for participation³. In attempts to address such issues, there have been a number of initiatives such as the “Nike Girls” and “This Girl Can” campaigns with great success. With recognition of the gender stereotype amongst the sport of weightlifting, BWL has had a strong focus towards the growth of female participation in attempts to challenge these perceptions. Weightlifting specifically has a mythological stigma around youth involvement and reduced growth rate. The belief that lifting a weight above head reduces the potential to grow detracts a lot of individuals from partaking in the sport. It is believed that such misinformation has accumulated from the fact that the elite weightlifters of the world are generally short in stature with short arm-lengths, traits that are highly complementary and biomechanically advantageous to the success in weightlifting. It is not the bi-product of weightlifting that resulted in the athlete having a shorter than average stature; it is the shorter stature that was the likely bi-product of their weightlifting success.

In addition to barriers preventing participation, it’s equally important to address those who drop-out from sport. A systematic review of drop-out in youths and adolescents

from Crane and Temple²³ noted that drop-out surrounded the following main areas; lack of enjoyment & perception of competence, pressures, time and injury. The greatest finding was lack of enjoyment and that individual's perceptions of their own ability became a barrier to enjoyment and resulting in a lack of desire to participate. Pressures were the second most reported reason for drop-out. These are both intra- and inter-personal pressures, with examples being; stress and poor role models (intra-personal), and pressures from facilitators as well as having 'other things to do' or social priorities (inter-personal). This closely relates to time, not having time to fit everything into daily life, travel to training may take a considerable time, resulting in a demotivation on participation. Lastly, drop-out has been aligned to poor sporting experience, with a large factor accounting to the personal experience of injury or association of injury specific to the sport^{27,52}. These traits have also been reported consistently from those who early specialise, with early specialisation being a large factor to sporting drop-out for these reasons in addition others^{12,33,50}, as echoed throughout this document.

Clubs and coaches have a role in providing supportive and positive experiences for the development of sport. This entails the reduction of injury potential, the removal of negative associated experiences and the increased positive experiences. Côté, Lidor & Hackfort²⁰ established seven postulates to the long-term involvement of youths in sport. These seven postulates are focused around early diversification, deliberate play and the opportunity to specialise or recreationally participate, a theme constantly revisited throughout this document. Furthermore, parents must engage with their children, be aware of their developments and allow opportunities for play for physical, social and psychological developments^{33,41}. Parents will facilitate participation from a practical standpoint, such as providing transport and resources for participation³². But they also need to consider how their engagement will potentially further benefit the experience of the youth and their motives within the sport. Finally, it is essential that support be provided from NGBs to clubs, coaches and parents to dispel myths and stereotypes potentially harmful to athlete engagement and further participation. Although scientific documentation is continually being updated to provide information on areas such as the safety, appropriateness and mechanisms

of engagement within sport, it is the duty of the NGB and other sports organisations to deliver this information in layman's terms for clear interpretation.

Conclusion

There is now a compelling body of evidence suggesting that BWL should focus its efforts on producing an offer for young people that is firmly based on: early diversification; a youth-centred approach that is holistic in nature; and focusing on the promoting of positive sporting experiences. It also suggests caution when considering the use of some common practices, such as: early specialisation; watered-down adult activities; and focusing narrowly on physical competence and performance. Early specialisation warrants particular attention. As reiterated throughout this document, early specialisation has been associated with a range of negative outcomes, and has no superior effects over the use of early diversification. In fact, the use of early diversification has been found to accommodate more positive sporting experiences and the holistic development of youth athletes, whilst developing standards of performance that are at least comparable with those found among early specialisers. It is of paramount importance that coaches and parents understand that the development of the youth athlete is a process over time, and should not be rushed to force early success (and stress) at the risk of safety, enjoyment and future participation.

A framework for youths does not necessarily have to replicate specifically the sport that is being trained. In weightlifting, qualities of the sport can be targeted through mechanisms such as games and fun activities. These activities should also encourage social aspects of development and cognitive challenges to allow for the achievement of physical literacy. As youth develop and demonstrate a desire to engage in the more formal training of the sport, implementation of technical training can commence, alongside training of physical literacy through games and activities. This should remain in an unstructured format to allow for the complete flexibility for change, per session. Loading of the athlete is not a priority, whereas technical competency should be emphasised continually alongside the development of physical literacy. As an athlete proceeds towards adolescents, they will be able to

tolerate gradual loading safely through the use of a more structured programme. Athletes should still engage with other sports and not be focused on only one sport, or performance outcomes. Coaches should aim to refine athletic ability continually through more advanced skills at this stage of development and beyond. Following the adolescent growth spurt, it is safer to load individuals to a greater extent with a highly structured programme, with a goal to increase performance standards over time, which can be done in a many different ways (beyond the scope of this paper).

It is essential to recognise that entry points of individuals can occur across a range of ages/stages, and for most of these individuals it is important that intentions are to develop general athletic ability before focused sporting ability. This is not to say that such individuals would have to start from square one, but they would certainly require a regressed format of structure (or unstructured) compared to their peers until adequate ability can be demonstrated. It is likely that their age and mental capacity will allow them to “fast track” their development.

Moving forwards, BWL hopes that this approach not only benefits youths’ experiences of weightlifting, but encourages greater long-term participation, aids the growth of local clubs and the sport, and enhances later international performances. Additionally, BWL hopes other NGBs look to this scientific approach of youth development to further support the appropriate development of youth and dispel the requirements of methodologically and ethically questionable approaches.

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