www.ukcoaching.org

UK COACHING

# How to Coach the Fundamentals of Movement

Cardiff School of Sport
Ysgol Chwaraeon Caerdydd

Youth Physical Development Centre
Canolfan Ddatblygu Corfforol Ieuenctid

UK Coaching is the brand name of The National Coaching Foundation and has been such since May 2017.

ISBN: 978-1-909012-41-7

This workshop and resource have been developed by UK Coaching in collaboration with Dr Jon Oliver and Dr Rhodri Lloyd at Cardiff Metropolitan University.

Thanks to Sylvia Moeskops and Steph Morris for their assistance in collecting the exercise photos.

**Technical Editors**
Jon Woodward and David Turner

Parts of this text have been developed from *An Introduction to the FUNdamentals of Movement*
© The National Coaching Foundation, 2013.

Cover photo © Iakov Filimonov/Shutterstock.com

UK COACHING

UK Coaching
Chelsea Close
Off Amberley Road
Armley
Leeds LS12 4HP
Tel: 0113-274 4802
Email: information@ukcoaching.org
Website: www.ukcoaching.org

Coachwise

Coachwise Ltd
Chelsea Close
Off Amberley Road
Armley
Leeds LS12 4HP
Tel: 0113-231 1310
Email: enquiries@coachwise.ltd.uk
Website: www.coachwise.ltd.uk

92780

# Foreword

Fundamental movement skills provide the foundations of physical activity and athletic development, giving children both the confidence and ability to engage in exercise. Children with well developed motor skills are likely to be healthier and more physically active, achieve greater success in sports, and even be better protected from experiencing injuries compared to those with lower skill levels. Often, it is assumed that fundamental skills such as the ability to crawl, balance, run, skip, jump, catch and throw will naturally develop as children grow older. However, evidence from around the globe and within the UK shows that the competency to perform basic motor skills is often very low in children. This represents a substantial problem as children lacking in fundamental movement skills are likely to reach a proficiency barrier, whereby they are unable to connect movements and learn more complex motor skills required to engage in sport and to lead an active life. Low levels of fundamental movement skill in the childhood population may reflect a shift to more sedentary lifestyles. However, low levels of movement skill can also be observed in athletic populations, particularly in children who specialise early in a single sport and miss the opportunity to experience and develop a diverse range of movement skills.

Childhood is a key time frame in which to learn and improve fundamental movement skills. During this period, the central nervous system experiences rapid growth, and motor pathways can be most easily developed. Consequently, an environment that encourages the child to continuously experience a rich variety of movements is recommended. The ability to execute fundamental and more advanced movement skills with control requires the simultaneous development of strength qualities, as all movements require the ability to produce force. This can be achieved in a fun and stimulating manner. A coach can continually manipulate both the environment and demands of a task to allow each child to progressively develop movement competency.

# About the Authors

**Jon Oliver**

Dr Oliver is currently a Reader in Applied Paediatric Exercise Science and co-founder of the Youth Physical Development Centre at Cardiff Metropolitan University. Dr Oliver is also an Adjunct Professor at the Sport Performance Research Institute New Zealand (SPRINZ) at Auckland University of Technology. He has been at the fore of challenging old, and developing new, models of youth athlete development, as well as contributing to contemporary national and international position and expert statements on training youths. This has been supported by experimental research examining the natural development of physical fitness and how growth and maturation interact to influence the responsiveness to training in youth populations. He currently acts as strength and conditioning research lead for the Welsh Institute of Performance Sport, and previously sat on the Sport Wales Physical Literacy Expert Group, as well as acting as convenor of the British Association of Sport and Exercise Science Paediatric Special Interest Group. Dr Oliver has collaborated with many professional organisations in a variety of youth sports, working with populations from grass roots to the elite level.

**Rhodri S. Lloyd**

Dr Lloyd is currently a Senior Lecturer in Strength and Conditioning, and Director of the Youth Physical Development Centre at Cardiff Metropolitan University. His research interests surround the impact of growth and maturation on long-term athletic development and the neuromuscular mechanisms underpinning resistance training adaptations in youth. He has published peer-reviewed manuscripts and book chapters, and edited a textbook on the topic of athletic training for youth. Dr Lloyd was lead author for the 2014 international consensus statement on youth resistance training, and lead author for the National Strength and Conditioning Association (NSCA) position statement on long-term athletic development. He is an editorial board member for the *Journal of Strength and Conditioning Research, Isokinetics and Exercise Science* and *Professional Strength and Conditioning Journal*. He previously served as a Board Director and paediatric lead for the UK Strength and Conditioning Association (UKSCA) from 2011–2015 and remains an active Executive Council member for the NSCA Youth Training Special Interest Group. Dr Lloyd is an accredited strength and conditioning coach with both the UKSCA and NSCA, a fellow of the Higher Education Academy, and a fully qualified physical education teacher.

# UK Coaching Foreword

When we were given the task of updating our Fundamentals of Movement workshop and resource, we set out to offer something that was cutting edge and at the forefront of research and practice in this area, while building on our previous programmes' good work.

In Jon and Rhodri at Cardiff Metropolitan University, we found our kindred spirits who not only thought the same as us, but had the passion, creativity and knowledge to help us produce a workshop that contains ideas and concepts that can be applied across sport, within coaching and to impact on a wide cross section of the population, from children through to adults.

Fundamentals are the bedrock of childhood development, and awareness and understanding of these can enable coaches to aid the developmental pathways of physical, cognitive, psychological, social and emotional development. The early, targeted development of these areas can serve as a support to children's ongoing engagement, enjoyment and success within sport and physical activity.

The concepts and ideas within this workshop and resource are aimed at introducing and supplementing the ideas in a coach's toolbox and, when used in conjunction with both generic and sport-specific skills, will practically help coaches by bringing the theory to life.

**Jon Woodward and David Turner**

# Contents

# Introduction

Modern society is characterised by people becoming more sedentary, led by technology and with seemingly limited leisure and recreation time. For many, this statement is particularly relevant to their own lifestyle. Perhaps more importantly, it is also relevant to present-day children who are the targets of the fast food, television and gaming industries. This resource considers and develops ideas that will introduce and encourage young children to adopt a healthy life in sport and physical activity. There has been much work recently on improving the delivery and processes involved in children's development in and through sport.

The factors affecting lifestyle and physical activity levels within our society are all-encompassing and varied in nature, and include:

- the obesity 'epidemic'
- the increase in consumption of fast and convenience foods
- the growing popularity of communication and gaming technology
- increased working hours
- less social and family time
- child protection concerns (the perception that it is not safe for children to play outside)
- the increase in the number of cars per household
- the decreasing number of 'playing areas'.

Any one or any combination of these factors can have a detrimental effect on a child's physical, mental and social development, as well as affecting their involvement in physical activity, sport and play.

It is also widely accepted that many children have negative introductions to and experiences in sport and physical activity that can disengage them for life.

The objective of this resource is to help coaches, teachers and parents understand the importance of developing fundamental movement skills in children and beyond. This resource supports the delivery of UK Coaching's How to Coach the Fundamentals of Movement workshop. The content of the workshop reflects contemporary evidence and practice in how best to promote the development of movement skills in children and beyond.



# Workshop Outcomes

By the end of this workshop, you should be able to:

- understand what fundamental movement skills are and why they are important
- understand the process of observing and correcting movement skill competency
- design and deliver warm-ups that promote movement skill development
- design and deliver body weight management training exercises that promote movement skill development.

A glossary of terms is provided at the end of this resource.

Additional resources related to the development and coaching of fundamental movement skills will also be signposted.

## Notes

# Male Youth Physical Development Model

| Chronological Age (Years) | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Maturational Status** | Pre-pubertal ⟷ | | | | | | | | | Pubertal (Growth Spurt) | | | ⟷ Post-pubertal | | | | | | | |
| **Training Adaptation** | Predominantly Neural ⟷ | | | | | | | | | | | | Combination of Neural and Hormonal | | | | | | | |
| **Physical Qualities** | **FMS** | | | **FMS** | | | | FMS | | | FMS | | | | | | | | | |
| | SSS | | | SSS | | | | SSS | | | **SSS** | | | | | | | | | |
| | Mobility | | | Mobility | | | | | | | Mobility | | | | | | | | | |
| | Agility | | | **Agility** | | | | | | | **Agility** | | | | | Agility | | | | |
| | Speed | | | **Speed** | | | | | | | **Speed** | | | | | Speed | | | | |
| | Power | | | **Power** | | | | | | | **Power** | | | | | **Power** | | | | |
| | **Strength** | | | **Strength** | | | | | | | **Strength** | | | | | **Strength** | | | | |
| | Hypertrophy | | | | | | | | | | Hypertrophy | | **Hypertrophy** | | | | | | | Hypertrophy |
| | Endurance and MC | | | Endurance and MC | | | | | | | | | Endurance and MC | | | | | Endurance and MC | | |
| **Training Structure** | **Unstructured** | | | **Low Structure** | | | | **Moderate Structure** | | | | | **High Structure** | | | | | **Very High Structure** | | |

Lloyd, R.S. and Oliver, J.L. (2012)

Note: This is the model for boys, who mature later than girls.

FMS = fundamental movement skills
SSS = sport-specific skills
MC = metabolic conditioning

= pre-adolescent periods of adaptation

= adolescent periods of adaptation

The larger the font size, the more important and responsive to training a physical quality is during the corresponding stage of development.

This contemporary model is based on evidence that shows that youth participants are responsive to training throughout childhood and adolescence. Coaches really can make a difference at all stages of development.

FMS are prioritised from an early age. This is because rapid development of the central nervous system during this period promotes the development and learning of motor skills. It is believed children will learn skills more easily at younger ages.

Mastery of FMS allows children to progress to the development of SSS. Where FMS are not mastered, this can lead to a proficiency barrier, preventing children from learning more advanced skills.

The simultaneous development of FMS and strength allows children to demonstrate controlled movements, and underpins all other forms of exercise.

## Notes

# Female Youth Physical Development Model

| Chronological Age (Years) | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Maturational Status** | Pre-pubertal ⟷ | | | | | | | | | Pubertal (Growth Spurt) ⟷ | | | | | | | | Post-pubertal | | |
| **Training Adaptation** | Predominantly Neural ⟷ | | | | | | | | | | | | Combination of Neural and Hormonal | | | | | | | |
| **Physical Qualities** | **FMS** | | | **FMS** | | | FMS | | FMS | | | | | | | | | | | |
| | SSS | | | SSS | | | SSS | | **SSS** | | | | | | | | | | | |
| | Mobility | | | Mobility | | | | | Mobility | | | | | | | | | | | |
| | Agility | | | **Agility** | | | | | **Agility** | | | | | | | | Agility | | | |
| | Speed | | | **Speed** | | | | | **Speed** | | | | | | | | Speed | | | |
| | Power | | | **Power** | | | | | **Power** | | | | | | | | **Power** | | | |
| | **Strength** | | | **Strength** | | | | | **Strength** | | | | | | | | **Strength** | | | |
| | Hypertrophy | | | | | | | | Hypertrophy | | | **Hypertrophy** | | | | | Hypertrophy | | | |
| | Endurance and MC | | | Endurance and MC | | | | | | Endurance and MC | | | | | | | | Endurance and MC | | |
| **Training Structure** | **Unstructured** | | | **Low Structure** | | | | | **Moderate Structure** | | | | **High Structure** | | | | **Very High Structure** | | | |

Lloyd, R.S. and Oliver, J.L. (2012)

Note: This version of the diagram reflects the early physical maturation of girls.

FMS = fundamental movement skills
SSS = sport-specific skills
MC = metabolic conditioning

= pre-adolescent periods of adaptation

= adolescent periods of adaptation

The larger the font size, the more important and responsive to training a physical quality is during the corresponding stage of development.

## Notes

# Fundamental Movement Skills




| Locomotion: | Manipulation: | Stabilisation*: |
|---|---|---|
| • walking | • catching | • turning |
| • running | • pushing | • twisting |
| • bounding | • pulling | • bending |
| • hopping | • dribbling | • landing |
| • leaping | • carrying | • stretching |
| • jumping | • bouncing | • extending |
| • rolling | • trapping | • flexing |
| • galloping | • throwing | • hanging |
| • climbing | • kicking | • bracing |
| • sliding | • striking | • rotation |
| • skipping | • collecting | • tucking |

*These movements are performed both dynamically and statically in place.

Faigenbaum, A.D., Lloyd, R.S. and Oliver, J.L. (in press)

FMS are categorised into:

1 locomotion
2 manipulation
3 stabilisation.

Examples of these skills are shown opposite.

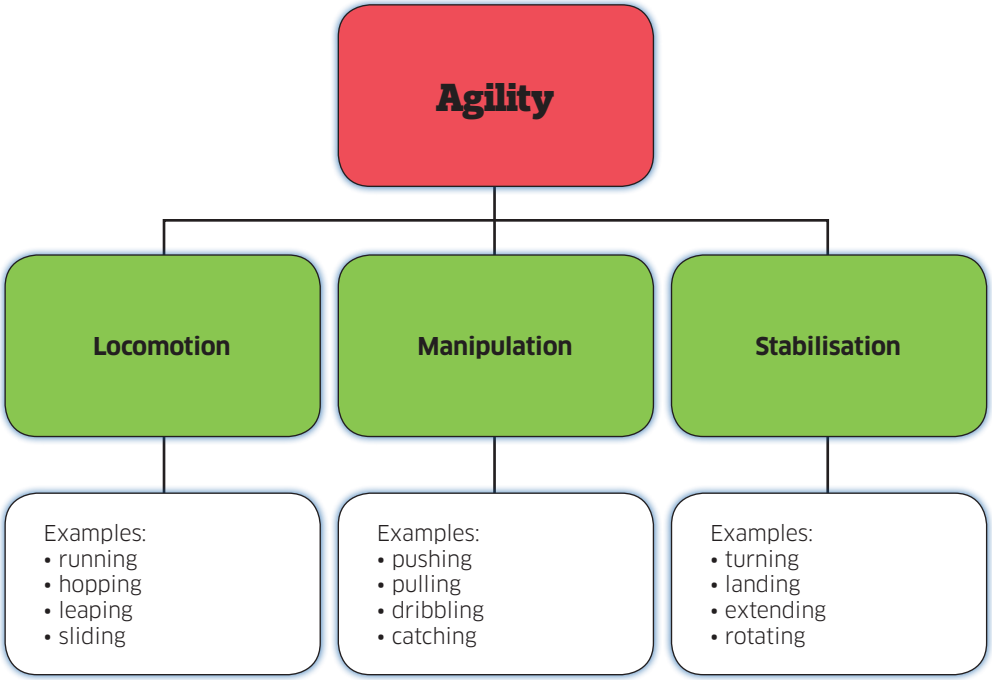
Mastery of these skills is not just the ability to perform a given movement, but the ability to perform the movement in a proficient and controlled manner (often at speed).

As a coach, you can begin by isolating movements to facilitate mastery of simple skills.

The long-term goal is to progress learning so children can link movement skills and simultaneously combine multiple skills.

## Notes

# Fundamental to Sport–specific Skills



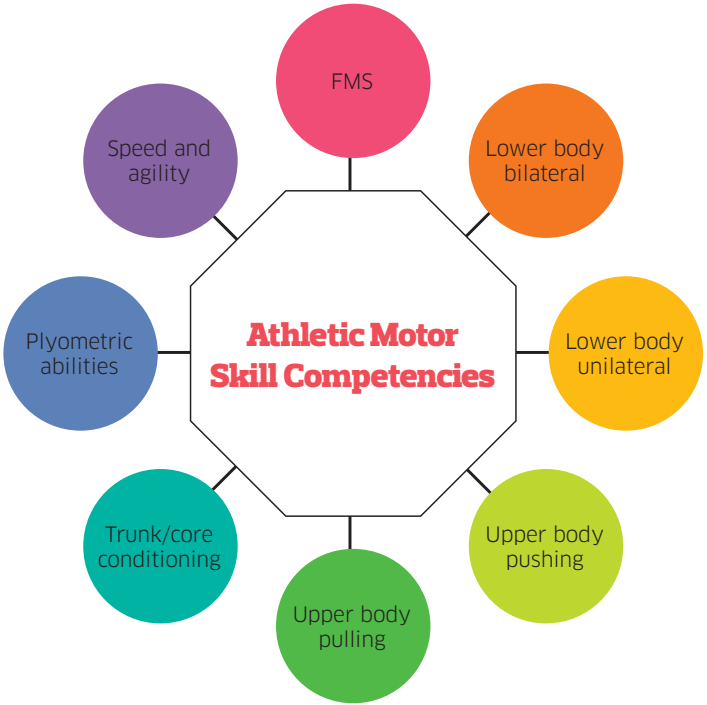

FMS provide the building blocks that enable a child to progress to developing SSS.

Agility is shown opposite as an example of an SSS. Agility is a key component and determinant of success in many sports.

An agile movement can be considered to be a combination of locomotion, manipulation and stabilisation skills combined into a rapid sequence of movement.

As a coach, you should not expect children to be proficient in producing sport-specific movements before they have mastered FMS.

## Notes




Lloyd, R.S. and Oliver, J.L. (2014)

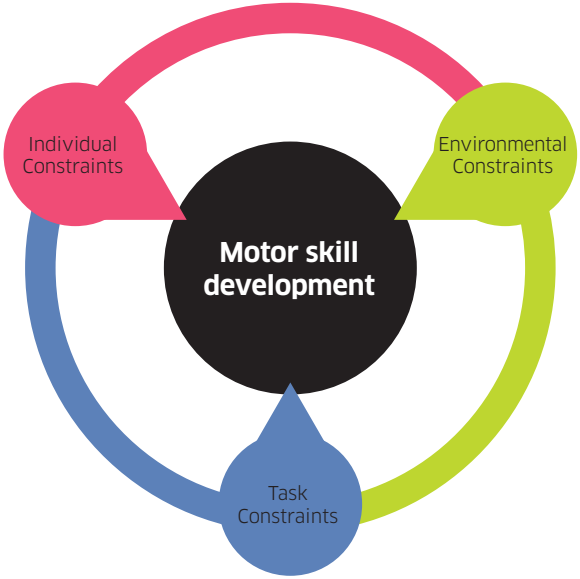
Children need to develop the physical and movement qualities that will allow them to engage in and enjoy sport.

These qualities are termed athletic motor skill competencies (AMSC).

All AMSC are underpinned by the need for a child to have mastered FMS. Where this has not happened, the ability to develop AMSC will be limited.

Poor movement skill and low strength may also make a child more susceptible to sports-related injuries.

## Notes




Lloyd, R.S. and Oliver, J.L. (2014)

As a coach, you can manipulate the constraints of a task to make it sufficiently challenging for a child.

For some children, this will mean having a very simple task, whereas for other children, the task will need to be more complex.

As a coach, you will typically manipulate the task constraints (eg rules of a task) or environmental constraints (eg physical surroundings).

Tasks can be made simpler or more demanding by using a model such as the STEP model.

The key fundamental skills can be developed in any coaching session with the application of high quality coaching principles.

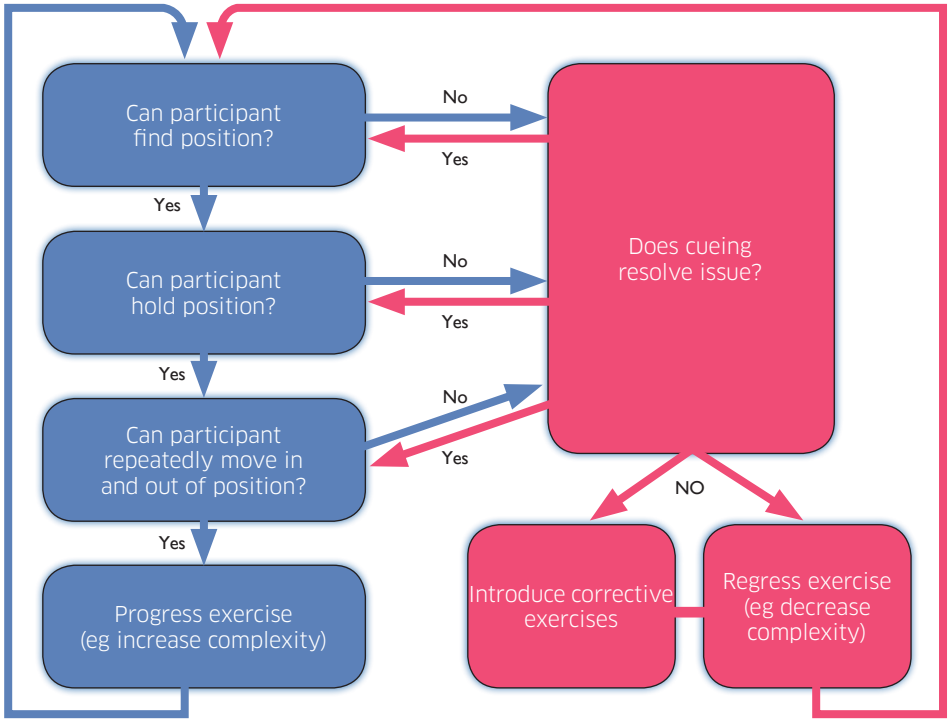
Try using the STEP principle to develop all your coaching sessions and make them participant-centred:

- **S** – Space (change the space in which the activity is taking place in order to achieve personal goals)
- **T** – Task (change the type of activity in order to achieve personal goals)
- **E** – Equipment (change the type and size of equipment being used in order to achieve personal goals)
- **P** – People (change the people who are involved in order to achieve personal goals).

Adapted from Stevenson (2007)

## Notes

# What Does Movement Competency Look Like?




Faigenbaum, A.D., Lloyd, R.S. and Oliver, J.L. (in press)

When coaching, the movement competency of children should be a key priority.

As a coach, you need to know what competent movement looks like. How should the child be moving during a task?

If a child struggles with a movement, you should see if additional cueing can help. External cues tend to work better than internal cues with children (eg 'Look at something in the distance,' rather than 'Keep your head' up if trying to correct head position).

If a child still struggles, regress the task and make it simpler, and if needed, introduce simple complementary exercises to help correct movement issues.

If a child demonstrates good competency, progress the task and make it more complex.

## Notes

# Developing Fundamentals during the Warm–up: The A–Z of Animal Shapes

| Animal | Description | Coaching Cues | Progression |
|---|---|---|---|
| **Alligator** | Low, crawl on all fours | Move close to ground<br>Keep belly off floor | Move + alligator roll |
| **Seal** | Dead legs, shuffle with weight on hands | Arms straight<br>Head and chest up | Move + rotate around hands/feet |
| **Bear** | Walk on all fours, stand tall like a bear | Arms straight<br>Stand tall and strong | Move + bear roar |
| **Rabbit** | Feet to hands (bunny-hops) | Arms straight<br>Spring from legs | Move + jump over farmer's fence |
| **Crab** | Walk sideways on all fours, belly to ceiling | Arms straight<br>Hips up | Move + show single arm alternating pincer<br>Multidirectional movements |
| **Flamingo** | Walk quietly (don't disturb the water), stand still on one leg | Reach with lead foot<br>Head still | Move + balance + reach for food |
| **Pig** | Move on all fours, roll in mud | Close to floor before you roll | Move + multidirectional movements |

Opposite are some examples of 'animal shapes' that can be used to promote FMS.

As a coach, you are encouraged to be inventive and come up with your own animal shapes or other shape examples (eg superhero shapes).

Let children be inventive and come up with their own animal shapes and progressions.

## Notes

# Developing Fundamentals via Body Weight Management Training: Shapes, Positions and Sports Acro

| Foundation Shapes | Foundation Positions | Partner Sports Acro |
|---|---|---|
| Tuck | Squat | Back-to-back squat |
| Pike | Forward lunge | Bed bunks |
| Straddle | Lateral lunge | Partner boxes |
| Star | Front support | Partner squat |
| Forward straddle | Side support | Front support gorilla slaps |
| Straight | Back support | Front support handstand |
| Dish | Shoulder stand | Front support travel |
| Arch | Bridge | Front support step-up |
| Puck | Handstand | Glute bridge and superman |

Body weight management training is great for simultaneously development FMS and strength.

Mastering body weight management training can help to provide the foundations for developing athletic motor skill competencies.

Be inventive:

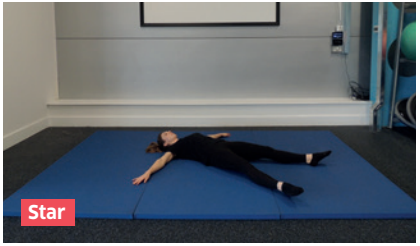
- As children start to progress, put sequences of movements together.
- Let children come up with their own sequence of movements.

Engage children – ask them how and why this training might be useful for sport.

## Notes

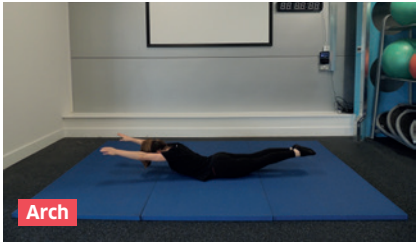
# Foundation Shapes










## Notes

# Foundation Positions



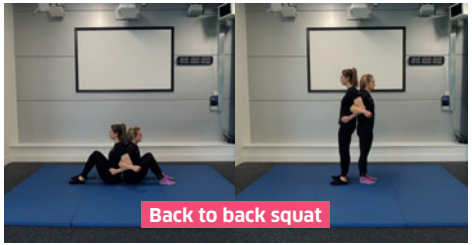




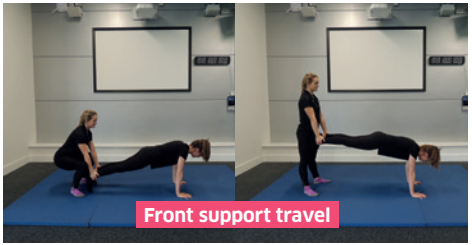


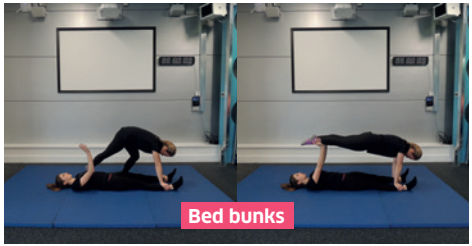
## Notes

# Sports Acro


Back to back squat

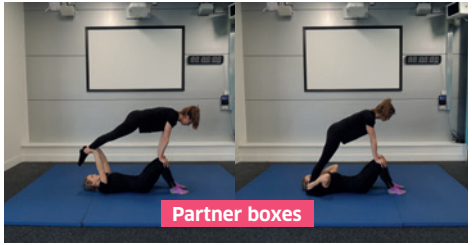

Partner squat

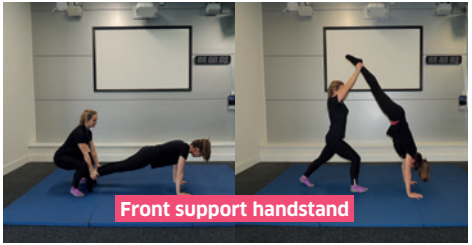

Front support travel

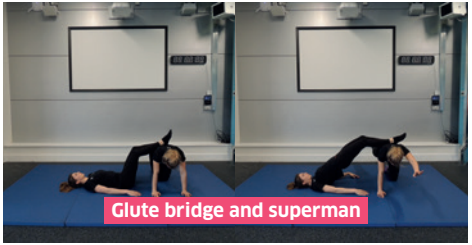

Bed bunks


Front support gorilla slaps


Front support step-up


Partner boxes


Front support handstand


Glute bridge and superman

## Notes

# Glossary

**Athletic motor skill competencies** – movement skills that form the basis of global movements, such as running, jumping and throwing, and also allow for progression to more advanced athletic training.

**Body weight management training** – a form of training that requires children to master body shape positions that require motor control and strength.

**Environmental constraints** – how the surroundings influence the ability to move (eg moving on a soft surface).

**Fundamental movement skills (FMS)** – basic motor skills that should be mastered during childhood and which can be classified as locomotion, manipulation and stabilisation skills. Mastery of these skills is needed to allow development of more complex skills.

**Individual constraints** – these can include both structural (eg size, flexibility) and functional (eg motivation, fear) barriers to movement.

**Metabolic conditioning** – exercise that aims to improve the ability of the muscle to use aerobic and/or anaerobic energy and resist fatigue.

**Movement competency** – the ability of a child to execute a skill with control and proficiency.

**Progressing exercise** – increasing the demands of a movement task, such as making a task more complex.

**Regressing exercise** – simplifying the demands of a movement task, such as making a task less complex.

**Sport-specific skills (SSS)** – more advanced motor skills that are needed to engage in sporting activities.

**Task constraints** – how rules and equipment are used to manipulate the degree of movement challenge.

## Notes

# References

Faigenbaum, A.D., Lloyd, R.S. and Oliver, J.L. (in press) *Essentials of Youth Fitness.* Champaign IL: Human Kinetics.

Lloyd, R.S. and Oliver, J.L. (2012) 'The youth physical development model: A new approach to long-term athletic development', *Strength and Conditioning Journal,* 34 (3): 61–72. http://goo.gl/l16Rd3

Lloyd, R.S. and Oliver, J.L. (2014) 'Developing younger athletes', in Joyce, D. and Lewindon, D. (eds) *High-Performance Training for Sports.* Champaign IL: Human Kinetics. ISBN: 978-1-450444-82-8. pp.15–28.

Stevenson, P. (2007) *Including Young Disabled People and SEN Pupils in FUNdamentals and Multi-skill Opportunities*. Loughborough: Youth Sport Trust (unpublished draft document).

# Our vision

To help create an active nation inspired through great coaching.

# Our mission

To put coaching at the heart of physical activity and sport.

# Our purpose

To help transform lives through coaching.

UK Coaching
Chelsea Close
Armley
Leeds LS12 4HP

t: 0113-274 4802
e: information@ukcoaching.org

**www.ukcoaching.org**

ISBN 978-1-909012-41-7