# The Role of Resistance training (RT) in Preparation of the Gaelic Games Youth

# Overview of workshop

- Benefits of RT to the youth athlete
- Myths surrounding RT and the youth athlete
- Effects of RT on functional competence, injury risk and performance capacities
- Appropriate RT for the youth athlete
- The key RT patterns of movement

# Benefits of RT to the youth athlete

# Benefits of Resistance training to the youth athlete

- Structural
- Mechanical
- Physiological

# Structural benefits of RT in the youth athlete

RT improves increases muscular strength in addition to improving ligament and tendon strength

RT positively alters bone  mineral density

RT positively impacts on body composition

(N.S.C.A. Position statement, 2009).

# Mechanical benefits of RT in the youth athlete

“Appropriately designed RT improves motor performance skills and locomotion qualities”

(N.S.C.A. Position statement, 2009).

# Physiological benefits of RT to the youth athlete

"Appropriately designed RT programmes positively influence blood lipids, aerobic fitness, anaerobic endurance, strength, speed, power and other components of fitness"

(N.S.C.A. Position statement, 2009).

# Health benefits

“Regular participation in a youth resistance training programme can have a favourable influence on musculoskeletal health, body composition and cardiovascular risk factors”

U.K.S.C.A Position statement 2012

# Myths surrounding RT and the youth athlete

# Myth 1

**Strength training will stunt the growth of children**

"Current observations indicate no evidence of a decrease in stature in children who regularly perform resistance exercise in a controlled environment. Furthermore,, regular participation in weight-bearing physical activities, such as strength exercise, will likely have a favorable influence on bone growth and development during childhood and adolescence."

(N.S.C.A. Position statement, 2009).

# Myth 1 contd.

“No scientific evidence indicates that resistance training will have an adverse effect on linear growth during childhood or adolescence,125 or reduce eventual height in adulthood”.

U.K.S.C.A. Position statement, 2012

# Myth 2

**Strength training is unsafe for children**

"With appropriate supervision and instruction, the risks associated with youth strength training are not greater than other activities in which children and adolescents regularly participate. The key is to provide qualified supervision, age-specific instruction and a safe training environment in order to reduce the risk of an accident."

(N.S.C.A. Position statement, 2009).

# Myth 2 contd.

"Fears that resistance training would injure the growth-plates of youths are not supported by scientific reports, which indicate that the mechanical stress placed on the developing growth plates from resistance exercise are actually beneficial for bone formation and growth."

U.K.S.C.A. Position statement, 2012

# Myth 3

Children should not take part in RT until they go through puberty

*"Although there is no minimum age requirement for participation in a youth resistance-training program, all participants should have the emotional maturity to accept and follow direction and should genuinely appreciate the potential benefits and risks associated with youth strength training."*

(N.S.C.A. Position statement, 2009).

# Role of RT in improving functional competence, reducing injury risk and improving components of fitness

# Role of resistance training

Increasing functional competency

# Role of RT in improving functional competence

Appropriately designed RT improves body/ limb control and structural stability in the key movement patterns.

Appropriately designed RT teaches our athletes how to create, absorb, stabilise and resist force in the most efficient manner possible.

# How we use RT to increase functional competence

Careful, patient and monitored progression along the movement pattern streams from basic to complex

# Functional competency and performance capacities relationship

"Increases in functional competency improve the athletes efficiency at applying force, reducing force, stabilising force and resisting forces leading to increases in strength, speed, power and endurance without focusing on improving these qualities"

(A.S.C.A. Position stand, 2007)

# Role of resistance training

Decreasing risk of injury

# Decreasing risk of injury

"Resistance training can be effectively used to reduce the likelihood of the occurrence of sporting injuries by the development of the musculo-skeletal system and through reducing muscular imbalances"

(A.S.C.A. Position statement 2007)

"Strength training may also decrease the incidence

of some sports injuries by increasing the strength of tendons, ligaments and bone"

(A.C.S.M. Position statement, 2002)

# Decrease risk of injury contd.

"Resistance training that is focused to address the risk factors associated with youth sport injuries (e.g. Low fitness level, muscle imbalances and errors in training) has the potential to reduce overuse injuries by

up to 50%."

U.K.S.C.A. Position statement, 2012

# How we use RT to decrease risk of injury

An appropriately designed RT programme addressees the muscular imbalances that are identified within the relevant movement analysis screens

“RT programmes that allow adequate time for recovery and adaptation develop the muscular systems in conjunction with increases in ligament, bone and tendon strength”

(Abernethy & Bleakley, 2007)

# Role of resistance training

Increasing performance capacities

# Increasing performance capacities

"Research has indicated that various forms of resistance training can elicit significant performance improvements in muscular strength, power production, running velocity, change-of direction speed and general motor performance in youth".

U.K.S.C.A. Position statement, 2012

# How we use RT to improve performance capacities

When functional competencies are present periodised and planned RT training programmes which manipulate training volume, exercise selection, movement velocity, rest intervals, intensity, recovery and frequency of RT lead to positive improvements in performance capacities

# Appropriate RT for the youth athlete

Volume - How much?

Intensity - How heavy/ intense?

Movement velocity - How fast ?

Frequency/ Recovery - How often?

Exercise selection - What movements?

# Appropriate RT for the youth athlete

"Children and youth benefit most from programs that improve body/limb control and joint stability. These programs would also inadvertently improve other outcomes (eg. strength-endurance, general strength) without specific training for those outcomes."

(A.S.C.A. Position statement, 2007)

# Appropriate volume

1-3  sets

6-15 repetitions

(N.S.C.A. Position statement, 2009)

2-4 sets

6-15 repetitions

(A.S.C.A. Position stand, 2007)

# Appropriate volume contd.

“a beginner may be prescribed 1-2 sets of 8-12 repetitions..... with increased exposure to formalised resistance training, they may increase prescription to 2-4 sets of 6-10 repetitions at a higher intensity”

U.K.S.C.A. Position statement, 2012

# Appropriate intensity

*"Strength training with maximal weights is not recommended because of the potential for possible injuries related to the long bones, growth plates, and back."*

(Faigenbaum & Micheli, 1998 p 2).

# Appropriate intensity

Loads used in youth RT aged 12-18 should be 6RM to 15RM

(A.S.C.A Position statement, 2009)

Exercise difficulty should be such that the athlete can complete ~8 repetitions of the exercises with proper technique

(A.C.S.M Position stand, 2007)

# Appropriate frequency

Two to three times per week on non-consecutive days

(A.C.S.M., N.S.C.A., A.S.C.A.

Position statements)

# Appropriate exercise selection

*"Exercise selection and progression must see force production, force reduction and force stabilisation developed via multi-joint, multi-direction and multi-plane activities".*

*(Movement Dynamics, 2005)*

*"Exercise selection should promote the development of body/limb control and joint stability"*

*(A.S.C.A Position statement 2007)*

# Exercise selection contd.

Athletes should earn the right to use advanced RT methods and exercises

High levels of functional competency and proficiency in bodyweight resistance training exercises should be achieved prior to progressing to advanced RT programmes

# Movement velocity

Initially during the learning stages the movement velocity should be slow and controlled but once the movement efficiency is established the velocity of the exercises can be increased.

U.K.S.C.A. Position statement, 2012

# Contd.

Once the movement efficiency is established, the movement velocity can vary within the session for different exercises, for eg. During the movement prep phase of the session the RT patterns maybe performed slow and controlled but then during the main RT part of the session the movement velocity may increase pending on the different stages of the season.

# The key RT Patterns

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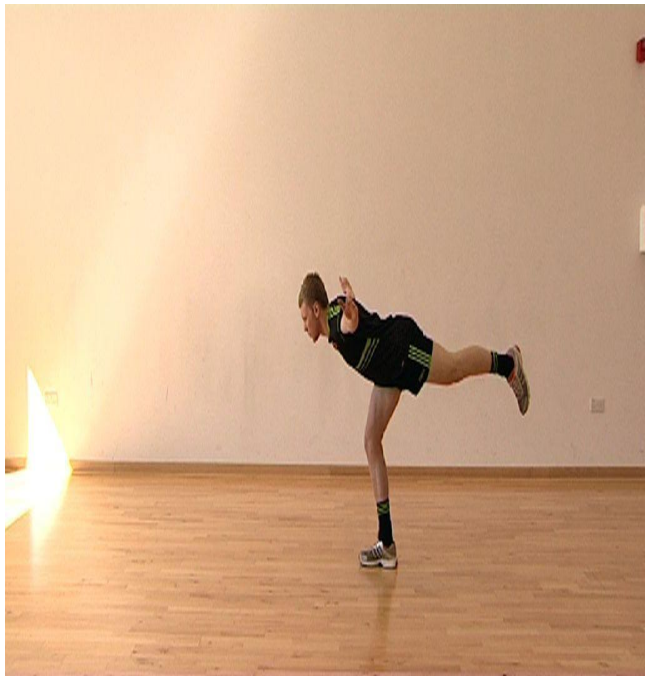
- Squatting
- Lunging
- Upper extremity pushing/ pulling
- Hinging
- Rotating/ Anti- rotation
- Jumping/ landing
- Bracing
- Single leg stability

# Squatting (triple flex/ext)

# Hinging



# Single leg stability

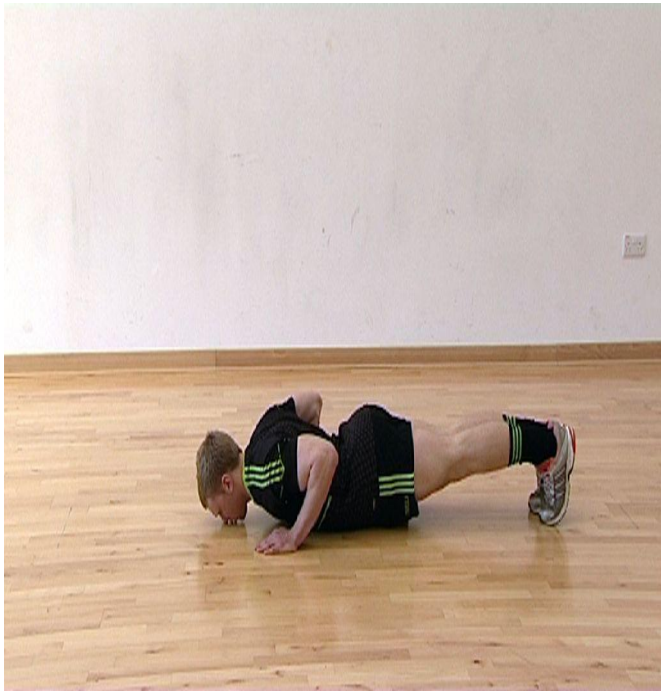
# Lunging

# Rotation

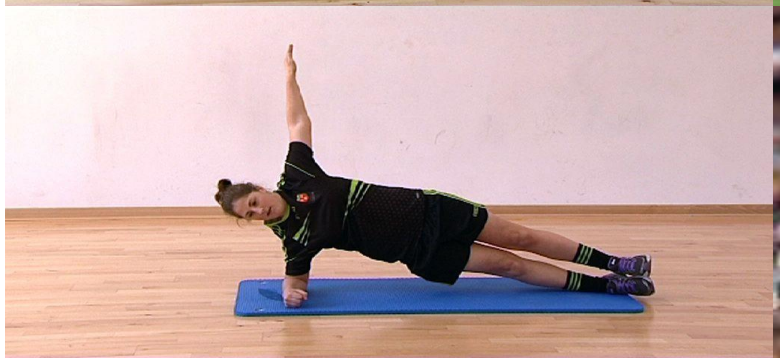
# Jumping/ Landing

# Pulling

# Pushing



# Bracing



# Readings and references

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N.S.C.A. Position statement on youth resistance training

http://www.nsca-lift.org/youthpositionpaper/Youth_Pos_Paper_200902.pdf

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# Key take home messages

# Key take home messages

Appropriate RT improves functional competence, reduces risk of injury and improves performance capacities.

Appropriate RT not only improves performance but has a positive effect on the health of the youth athlete

Youth RT should initially focus on developing functional competency and movement quality prior to focusing on strength, power etc.

*"Exercise selection should promote the development of body/limb control and joint stability"*

# Thank you