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Resistance Training Guidelines for Active Females Throughout the Lifespan, from Childhood to Elderly

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Abstract

Resistance training (RT) configures a specialized method of training that involves the progressive use of a wide range of resistive loads, different rate of muscle activation or movement velocities, and a variety of training modalities. RT is currently considered essential in athletic preparation. It is a key component for optimizing growth and maturation in children, promoting health and quality of life in the elderly, or to attenuate the incidence of injuries in physically active populations. Qualified professionals are necessary to design individualized RT programs for athletes from varying disciplines with very specific performance outcomes. The professional must consider specific needs for all ages, not only the athletic population, making the necessary adaptation to meet their level of ability and desired outcomes. Effective training stimuli should help increase performance and avoid overtraining. This is accomplished by manipulating physiological, neurological, and biomechanical-related variables. There is hard science behind the importance of menstrual cycle-based periodization, and—although research in this area is scarce—results suggest that designing training programs integrating the menstrual cycle hormonal fluctuation or the ingestion of triphasic contraceptives might be of relevance to optimize performance in premenopausal women.

Keywords

- **Resistance training**
- **Injury prevention**
- **Performance**
- **Children**
- **Adolescents**
- **Adult**
- **Elder**
- **Menstrual cycle**

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Chapter Review Questions

1. 1.

Muscular contractions are a determinant factor for a healthy skeletal system, and _____ is/are the most crucial and sensitive periods for accelerating growth in bone mass

1. (a)

   Childhood and adolescence

2. (b)

   Adolescence and early adulthood

3. (c)

   Adulthood

4. (d)

   None of them

2. 2.

Skeletal muscle mass (SMM) accounts for what percentage of body weight at birth?

1. (a)

   23–25%

2. (b)

   30–35%

3. (c)

   42–46%

4. (d)

   28–30%

3. 3.

What has been defined as the SMM loss associated with physical frailty partly responsible for hospitalization and loss of independence?

1. (a)

   Osteopenia

2. (b)

   Hypertrophy

3. (c)

   Sarcopenia

4. (d)

   Osteoporosis

4. 4.

Resistance training was avoided in the past for children because of which of the following?

1. (a)

   Damage to growth plates

2. (b)

   Not able to receive benefits

3. (c)

   Both a and b

4. (d)

   None of the above

5. 5.

Intensity is the key component of conducting an optimal resistance training design, and it is the result of combining two main factors

1. (a)

   relative load and the resting periods

2. (b)

   number of exercises and the movement velocity

3. (c)

   relative load and frequency of training

4. (d)

   relative load and the movement velocity

6. 6.

Impulsive strength using heavy loads refers to the capacity to apply maximal force to moderate or heavy resistances.

1. (a)

   up to ~60% of the estimated maximum

2. (b)

   up to ~70% of the estimated maximum

3. (c)

   up to >60% to ~85% of the estimated maximum

4. (d)

   between ~30 and ~60% 1RM of the estimated maximum.

7. 7.

Current evidence shows that preadolescent girls have _____strength to boys

1. (a)

   higher

2. (b)

   similar

3. (c)

   lower

4. (d)

   none of the above

8. 8.

   A workout volume >30 total sets (including all exercises) once a week in adults aims

   1. (a)

      Hypertrophy

   2. (b)

      Power

   3. (c)

      Muscular strength

   4. (d)

      Muscular endurance

9. 9.

Research highlights the relevance of designing training programs integrating the menstrual cycle hormonal fluctuations. Most optimal results were attained when training

1. (a)

   ≥4 days/week during Follicular Phase (same muscular group, multi-joint and larger muscle groups) combined with
   1 day/week training session during Luteal Phase

2. (b)

   3 days/week during Follicular Phase (same muscular group, multi-joint and larger muscle groups) combined with
   ≥4 days/week training sessions during Luteal Phase

3. (c)

   1 day/week during Follicular Phase (same muscular group, multi-joint and larger muscle groups) combined with
   3 days/week training sessions during Luteal Phase

4. (d)

   1 day/week during Follicular Phase (same muscular group, multi-joint and larger muscle groups) combined with
   ≥4 days/week training sessions during Luteal Phase

10.10.

In elderly, after a period of absence of training is recommended restart the resistance training with loads ____ or less than previous intensity.

1. (a)

   20%

2. (b)

   30%

3. (c)

   40%

4. (d)

   50%

Answers

1. 1.

   a

2. 2.

   a

3. 3.

   c

4. 4.

   c

5. 5.

   d

6. 6.

   c

7. 7.

   b

8. 8.

   a

9. 9.

a

10.10.

d

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