

Definitions and Goals

Adapted Physical Activity (APA):

Adapted Physical Activity (APA) is a form of exercise designed to promote movement in individuals who are unable to engage in physical activity in usual conditions, due to their physical or mental condition. APA is designed to meet the needs and capacities of individuals living with chronic diseases, including rare ones.

Main goals:

- Improve quality of life
- Improve muscle strength and mobility
- Increase independence
- Reduce disease-specific symptoms
- Prevent secondary complications
- Promote social integration and reduce isolation

Importance of APA for rare calcium disorders

1. Adaptability
 - APA allows exercises to be tailored to individual abilities and limitations
 - It takes into account the specific features of each rare disease, which are often poorly understood
2. Functional improvement
 - Increased muscle strength, endurance and flexibility
 - Improved mobility and coordination
3. Psychological well-being
 - Reduction of anxiety and depression
 - Improved self-esteem and body image
4. Social support
 - Opportunities for social interaction and community support
 - Sharing experiences with others living with similar conditions

Core principles of Adapted Physical Activity

1. Initial assessment
 - A medical prescription for physical activity issued by the primary care physician as part of the care pathway for patients with a long-term condition, using a specific form.
 - Assessment of physical abilities and specific limitations by a qualified professional.
 - Consideration of medical history (including blood calcium levels) and ongoing treatments.
2. Personalised programmes
 - Development of a specific exercise programme based on symptoms and individual needs.
 - Monitoring and adjustment according to the person's progress and abilities.

3. Professional supervision
 - Guidance provided by qualified professionals (physiotherapists, APA specialists, specialist sports instructors)
 - Regular follow-up to adapt exercises and ensure safety.
4. Safety and prevention
 - Injury prevention through proper warm-up and post-exercise stretching.
 - Risk management and monitoring of calcium levels.
 - Education on early warning signs of fatigue and complications.

Examples of Adapted Physical Activities

1. Gentle aerobic exercises
 - Walking, swimming, gentle cycling
 - ➔ Improvement of cardiovascular endurance
2. Muscle strengthening exercises
 - Use of light weights, resistance bands, bodyweight exercises
 - ➔ Strengthening to improve muscle function and help reduce cramps and spasms
3. Balance and coordination exercises
 - Tai-chi, yoga, exercises on stable and unstable surfaces, arm/leg coordination
 - ➔ Fall prevention and improvement of stability and coordination
4. Stretching and flexibility
 - Gentle stretching of muscle and joints
 - ➔ Improvement of range of motion and reduction of stiffness

Rare calcium disease: the example of hypoparathyroidism

Hypoparathyroidism is a rare disease of genetic origin or following a cervical surgery. It is characterised by insufficient production of parathyroid hormone (PTH) by the parathyroid glands, which play a crucial role in regulating calcium and phosphorus levels in the blood and bones.

This deficiency leads to hypocalcaemia (low blood calcium levels) and hyperphosphataemia.

Main symptoms:

- Muscle cramps and spasms
- Tingling or pins-and-needles sensations
- Persistent fatigue (asthenia) and weakness
- Anxiety and depression
- 'Brain fog'

Importance of APA in hypoparathyroidism:

1. Improvement of muscle strength and function
 - Reduction of muscle spasms and cramps through appropriate exercises

- Muscle strengthening to better manage symptoms
- 2. Fatigue management and overall well-being
 - Increased energy and resistance to fatigue
 - Reduction of anxiety and depression often associated with the condition
 - Maintenance of independence
- 3. Prevention of complications
 - Improvement of bone density and prevention of osteoporosis
 - Maintenance of mobility and flexibility to prevent injuries

Specific approaches for hypoparathyroidism:

1. Medical monitoring
 - Regular consultation with an endocrinologist to monitor calcium levels and adjust supplementation if necessary
 - Assessment of vitamin D and magnesium requirements
 - Monitoring of symptoms and complications:
 - Annual follow-up with an ophthalmologist and dentist
 - Monitoring of renal function (follow-up with a nephrologist)
 - 24-hour urine collection
 - Renal imaging
2. Hydration and nutrition
 - Maintain adequate hydration to help prevent muscle cramps
 - Balanced and adapted diet to support bone and muscle health
 - ➔ Regular and stable calcium intake, through dairy products or other sources (calcium-rich mineral water, almonds for example, except in cases of hyperoxaluria or kidney stones). Calcium intake should be adapted to the situation when necessary (particularly before physical exertion).
 - ➔ A low-salt diet is essential to limit urinary calcium loss and reduce the risk of kidney stones.
3. Exercise adaptation
 - Adjustment of exercise intensity and duration according to individual tolerance
 - Inclusion of rest periods to avoid excessive fatigue ('over-fatigue')

Conclusion

APA provides a personalised and safe approach for individuals living with rare calcium disorders, contributing significantly to their physical and mental well-being.

It is a key component in the management of hypoparathyroidism, helping to improve muscle strength, mobility, and overall well-being while minimising disease-specific symptoms.

A personalised approach, supervised by qualified professionals, is essential to optimise benefits and ensure participant safety.

Resources and References

- Patient associations: Provide information, guidance, and support programmes for rare calcium disorders such as hypoparathyroidism
- Healthcare professionals: Primary care physicians, endocrinologists, nephrologists, physiotherapists, and adapted physical activity specialists
- Scientific literature: Studies and publications on the impact of APA in hypoparathyroidism and other rare calcium disorders, including national clinical guidelines (PNDS)