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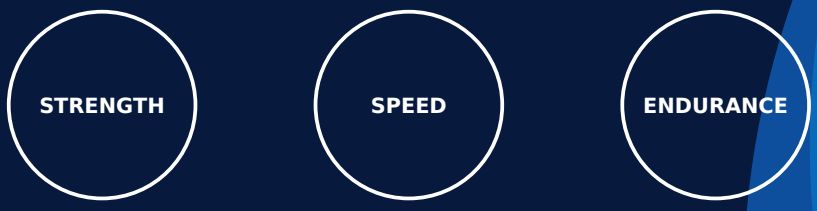
STRENGTH, ENDURANCE AND EXPLOSIVE PERFORMANCE IN UNDERWATER RUGBY

Producing, repeating and preserving force from the first action to the final shift



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Why was this guide prepared?

Success in Underwater Rugby cannot be explained by strength alone. Athletes must accelerate quickly, hold position against contact, carry the ball, attack the basket and repeat these actions across repeated breath-hold periods.

Performance therefore depends on maximal strength, relative strength, explosive force, repeated high-intensity capacity, aerobic recovery and technical economy working together.

This guide explains the main physical qualities required in Underwater Rugby and why strength training is more than lifting heavy weights, while endurance is more than swimming for a long time.

Contents

The physical profile of Underwater Rugby

STRENGTH	SPEED	ENDURANCE
Resist contact	First fin kick	Repeat efforts
Protect the ball	Reach the ball	Recover between shifts
Hold position	Change direction	Preserve technique
Gain space	Beat the opponent	Carry match load

Underwater Rugby is a three-dimensional, contact-based and intermittent high-intensity sport. It includes short sprints, changes of direction, isometric struggles around the basket, ball carrying, blocking and rapid surfacing.

A single powerful effort is not enough. Athletes must repeat high-quality actions throughout a match and recover quickly between shifts.

The physical profile cannot be reduced to “strong or fit.” The effective player produces force, directs it correctly and repeats it under fatigue.

What is strength?

Strength is the capacity to produce force against resistance. It is needed to resist an opponent's grip, protect the ball, gain space around the basket and maintain body position.

Absolute strength matters, but relative strength is also important because the athlete must manage body mass and external force in water.

More muscle mass does not automatically mean better performance. Excess mass may reduce movement economy, manoeuvrability and breathing efficiency. The aim is useful force without unnecessary load.

What is explosive performance?

Explosive performance is the ability to produce high force in a short time. The first fin kick, beating an opponent to the ball, a sudden reach and acceleration toward the basket all depend on this quality.

Maximum strength alone is not enough. The rate at which force develops is equally important. Two athletes may have similar maximal strength, yet the faster force producer gains the early advantage.

Explosiveness develops through neuromuscular coordination, technique, muscle-tendon qualities and sport-specific practice.

Endurance is not one quality

Aerobic endurance supports recovery between shifts and helps carry the total match load. Anaerobic capacity contributes to speed and force during short high-intensity efforts.

These systems do not compete; they work together. An athlete may produce intense anaerobic power underwater while the aerobic system accelerates recovery at the surface and between substitutions.

Long easy swimming alone does not prepare explosive play, while sprinting alone does not guarantee match-long recovery. Training must develop both systems.

Repeated-sprint ability

One of the key performance qualities is the ability to repeat short, intense efforts with limited recovery.

The first sprint may be excellent; the important question is how much speed remains during the fifth, tenth or final shift. With fatigue, fin-kick length may shorten, decisions slow and technique deteriorate.

Repeated-sprint training can help preserve speed when correctly dosed. Excessive frequency or poorly managed volume may impair recovery and increase injury risk.

High-intensity effort during breath-holding

In Underwater Rugby, muscles work intensely while breathing temporarily stops. Oxygen is consumed faster and carbon dioxide accumulates.

Athletes face not only muscular fatigue but also the urge to breathe and a narrowing of attention. Explosive performance cannot therefore be separated from breath-hold demands.

Rather than forcing longer breath-holds, athletes benefit from efficient movement, reduced unnecessary tension and a timely safe ascent.

Lower-body and fin power

Fin propulsion is a major source of acceleration. Hip extensors, muscles around the pelvis, the thighs and the trunk work together.

Large movements driven only from the knees may waste energy. A rhythm initiated at the hips, stabilised by the trunk and matched to the fins is more efficient.

Squats, split squats, deadlift variations and jumps can build general strength. Transfer to the sport requires fin sprints, changes of direction and position-specific drills in water.

Upper-body, grip and isometric strength

The shoulder girdle, back, arms and grip are important for protecting the ball and holding position against contact.

Around the basket, muscles often work without visible movement. Isometric strength and strength endurance are therefore essential.

Pulling, pushing, carrying, controlled gripping and trunk-stability work can help. Neck and shoulder training should be supervised and progressed carefully.

Trunk strength and three-dimensional control

There is no stable floor underwater. As the arms and legs produce force, the trunk must transfer that force and preserve body direction.

Core strength is not simply visible abdominal muscle. It includes resisting rotation, linking the hips and shoulders and controlling the body in several directions.

Anti-rotation, controlled rotation, loaded carries and swimming-position stability drills may support three-dimensional control.

Speed, agility and change of direction

Changing direction in Underwater Rugby differs from land-based agility. Athletes move upward, downward, forward, backward and sideways while also rotating and escaping contact.

Agility is not only physical speed. It includes reading the opponent, ball and teammates, then selecting the correct action.

Training should therefore include both pre-planned movement and sport-specific reaction drills using visual or tactile cues.

How fatigue changes technique

As fatigue rises, fin rhythm, body position and ball control may deteriorate. The athlete spends more energy to maintain the same speed.

Technical breakdown is more than a performance loss. It can increase oxygen consumption and reduce safety during contact.

The aim of training is not to take every repetition to exhaustion. It is more useful to identify when quality begins to fall and adjust the load.

How should strength training be planned?

Strength training should include basic movement patterns, single-leg control, pushing and pulling strength, trunk control and relevant isometric work.

Maximum-strength work and explosive training are not identical. Heavy loading develops the strength base, while lighter fast movements teach the athlete to express force quickly.

Programming must reflect age, training history, season phase and injury history. In children and adolescents, technique, coordination and safe progression come first.

How should endurance training be planned?

Low- and moderate-intensity aerobic work supports general conditioning and recovery. High-intensity intervals develop demands closer to match play.

Making every session hard does not accelerate progress. It may accumulate fatigue and reduce the quality of speed and strength work.

Easy, moderate and hard days should be separated, while water and dry-land loads are considered together.

Recovery is part of performance

Strength and endurance are stimulated during training but developed during recovery. Poor sleep, low energy availability and dehydration reduce performance and learning.

Muscle soreness is not the same as injury. Sharp pain, joint instability, swelling or progressively worsening symptoms require assessment.

When an athlete feels persistently tired, unmotivated and slower, the answer is not automatically more work. Training load should be reviewed.

How can performance be monitored?

No single test captures all Underwater Rugby performance. Strength, jump ability, short sprint speed, repeated-sprint ability, swimming economy and sport-specific technique can be monitored separately.

Testing should guide training rather than label the athlete. It must be repeated under similar conditions with safe and consistent protocols.

Numbers should be interpreted alongside coach observation, perceived fatigue and technical quality.

Final note and references

Strength matters in Underwater Rugby, but using it at the right moment, repeating it and preserving technique under fatigue matter even more.

Explosive performance is not the opposite of endurance. Aerobic fitness supports recovery, strength supports contact and positioning, and speed decides critical moments. Good programming treats these qualities as complementary.

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This guide is for general information. Individual training should be planned according to age, health, development and professional assessment.