

THE HANDBALL GOALKEEPER — CHARACTERISTICS OF THE POSITION, PLAY, TECHNIQUES, TRAINING

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Abstract Changes in a goalkeeper's technique, his physical and mental preparation are ongoing, forced by the increasing power of the throw, speed of the game, improved players' throwing capability; throws with rotation and other technical innovations involved in this element.

The goalkeeper's tasks are not only limited to defending the goal. He participates in launching a quick attack or quickly resuming play after conceding a goal.

Goalkeeper training should be varied in order to mobilize the body's full energy potential and shape the elements of the technique. The goalkeeper should be intelligent, courageous, endowed with the excellent physical condition and above all physically fit.

Key words goalkeeper, handball, characteristics of the position, play, techniques, training

Training

Classification of physical exercise

Training involves the nervous system and affects its performance. Because of the training stimulus, conduction is much faster, since it activates motor units.

Movements (technique) become automated, acquired and therefore precise. Training – not only of a goalkeeper – should take into account the influence on all human senses in order to be able to take full advantage of the capabilities and abilities of a player.

Physical exercise induces a series of immediate functional changes in the body which accumulate over time to result in specific adaptation to physical exercise, which in sports terminology is referred to as physical capacity (physical capacity is the potential capability of intensive and long-term exercise with minor fatigue-related changes and fast effective rest) (Suchanowski, 1997).

Physical exercise can be divided into two basic categories:

1. Aerobic exercise, characterized by long-term physical effort lasting from 2–3 minutes to several hours, where the body functions in a steady-state to maintain a certain intensity.
2. Anaerobic exercise, characterized by short intensive physical effort using limited intramuscular energy resources. The high pace of changes makes it impossible to replenish this potential either by oxidation or by circulating blood, which results in oxygen debt, repaid during the rest.

Each of the exercise types mentioned above is characterized by a different type of strain, depending on its length, intensity and method of renewal (phosphocreatine, glucose, glycogen, fat and protein). Bearing this in mind when developing motor skills (strength, speed, endurance), other factors which will allow to develop a given ability should also be taken into consideration each time, such as the intervals between individual stimuli. Fatigue is inextricably intertwined with the training process.

Sources of exercise-induced fatigue can be divided into four groups of strains, depending on the characteristic mechanisms of fatigue:

- a) the first group is maximum anaerobic strain (10–20 seconds in duration), fatigue is associated first and foremost with processes in the central nervous system and expending of phosphocreatine resources;
- b) the second group includes close to maximum and maximum anaerobic strain (20–90 seconds in duration) connected to the production of lactic acid, where fatigue is caused by the accumulation of lactates, which negatively affect the function of the central nervous system (lactic acid hinders the conduction of nerve impulses);
- c) the third group is associated with strain of maximum (5–10 minutes) and submaximal (30–80 minutes) aerobic capacity, leading to greater involvement of the oxygen transport system and using glycogen and glucose from the blood.

Fatigue

In this context, fatigue has a vegetative character and is due mainly to depletion of glycogen in the liver and muscles, and reduced capability of the cardiac muscle. The fourth group are strains of small and medium aerobic capacity, i.e. over 80–90 minutes, where the mechanism of fatigue is similar to the previous group, but in this case, fatigue can also be affected by incorrect thermoregulation and the effects of anoxaemia of products of breakdown of fats.

The main cause, often resulting in interruption of the exercise due to fatigue, are defensive reflexes in the central and peripheral nervous system. This leads to a dominance of inhibition over stimulation and disruption of the flow of impulses transmitted along nerve-nerve synapses (general fatigue – central) and nerve-muscle synapses (local fatigue – peripheral). It is a cause of disturbance in the technique of movement, incorrectness of movement, impairment of reaction, the wrong choice of the type of movement (Malarecki, 1981).

Rest

Another important issue related to training is rest. Recovery processes depend on the type, duration and intensity of the effort, and with reference to the various types of exercise it can be concluded that:

- a) after anaerobic exercise lasting up to 30 seconds at an intensity of approx. 90%, recovery occurs within 90 to 120 seconds;
- b) in the case of anaerobic exercise involving the accumulation of lactic acid, certain vegetative (e.g. respiratory) indicators go back to normal after approx. 60–90 seconds, and recovery of others may take 3–4 minutes or more, depending on the intensity and duration of the effort causing the accumulation of lactic acid; sometimes the metabolism of lactic acid can take 1–1.5 hours;
- c) after maximum aerobic effort with an average pH value of 6.9, normalization of indicators happens at a variable rate and the recovery time for pH of arterial blood – 1 hour, for blood glucose – 3 hours, for glycogen in the muscles – 3 days;
- d) for aerobic continuous load, the renewal of glycogen in muscles is usually carried out in two stages, and after 1 hour – 67%, and after 24 hours – return to the baseline.

In addition, it should be added that the intensity of the recovery processes varies over time, and the greatest intensity is usually seen immediately after the cessation of effort. After intense effort, e.g. strength exercises, the intensity of recovery decreases significantly after just 10–15 minutes after exercise. It is characteristic that the recovery is usually carried out in three stages, as follows:

- in the first stage of rest, 60% of recovery takes place,
- in the second stage of rest, a further 30% takes place,
- in the third stage of rest, the remaining 10% of recovery takes place.

Knowledge related to this issue is certainly important and should be used in the organization of the training.

Let us consider how all this information relates to the specificity of the goalkeeper's functions in handball, since it creates the basis for specifying the nature of the goalkeeper's efforts in the context of overall conditions related to the development of the relevant functional characteristics. This is necessary to accurately define the scope, direction and nature of measures implemented in the training process. From that standpoint it can be concluded that the goalkeeper's functions are characterized by short high-intensity actions which require intense concentration and precision of movement, resulting in both physical and mental stress. Referring to the previously discussed sources of energy, it can be stated that the goalkeeper's efforts can be defined as non-lactate anaerobic exercise, further characterized by a large involvement of the psychological sphere (Norkowski, 2002; Malarecki, 1981).

The nature of sports competition

The area of the handball goalkeeper's activity is around the goal area (ca. 80 m²), wherein he operates mainly in the close vicinity of the goal, i.e. in about 1/3 of the area, and his range of movement usually does not exceed 10–15 metres. Consequently, the space and range of activities are relatively small. Analysis of his actions in the gameplay leads to the conclusion that three basic groups of activities can be identified, namely:

- moving in order to take a position in relation to the current position of the ball, or in connection with taking over the ball in order to resume play,

- interventions, i.e. appropriate use of the torso and limbs when the ball is thrown,
- manoeuvring the ball in order to take control of it after intervention, or resuming the game after a missed shot or a shot deflected by the goalkeeper or the goal.

The goalkeeper intervenes between 40 and 50 times. The rhythm of his actions depends on the rhythm of the opponents' offensive actions, and barring breaks in the game, a goalkeeper acts according to the following scheme: focusing for 30–50 seconds, responding to the ball movement, resuming play with a throw, and distractions while co-players are in possession of the ball. The whole cycle starts again from the moment an opponent is in possession of the ball. The extent and nature of the goalkeeper's activity lie within short duration maximum efforts, interspersed with periods of rest, the length of which allows regaining a physiological balance. The nature of the activity indicates that the sources of energy here should be non-lactic anaerobic processes (the main source of the resynthesis of ATP is phosphocreatine), since the goalkeeper's actions or interventions, even if it requires running to the ball after a missed shot, last between a few to several seconds. Determination of the intensity of the goalkeeper's activity based solely on the measurement of the heart rate can be misleading, due to the small range of movement and short duration of effort where the pulse does not adequately reflect the level of the body's response to the exercise. The scale of the load depends largely on psychological tension and emotional states related thereto, since the goalkeeper performs under increased psychological pressure, which in difficult situations (ineffective intervention, critical evaluation) can reach a level of stress. Great strain on a goalkeeper's psyche can be put down to the need to repeatedly re-focus and can also be the result of a sense of responsibility for the result of his actions.

The goalkeeper's effort is cyclical, his behaviour repeatable, its rhythm is determined to the same degree by the pace and nature of the actions of the defensive co-players and the offensive opponents.

Despite such difficult operating conditions, the goalkeeper's efficiency is on average approximately 40–43%, and depending on the degree of difficulty of each situation, connected to the place and methods of the throws, may vary between 25–65%.

Characteristics of the position

The number of goalkeeper's effective interventions in a handball match largely determines its outcome. A good goalkeeper, who defends 40–50% of throws, contributes significantly to increasing the value of the team and improving the game's outcome. The goalkeeper's performance requires great and specific physical effort, excellent skill and courage. The small distance from the throwing player and the constantly increasing force of the throw require not only quick reflexes but also predicting the trajectory of the ball, as well as good cooperation with defenders.

The number of goalkeeper interventions in one match amounts on average to 50 throws. Each of his mistakes is easily visible, and at the same time almost beyond repair.

But the most important factor in the goalkeeper's play is the analysis of the situation on the court, position of the throwing player's hand, frequency of throws into the specific area of the goal, place of the throwing player's jump.

Being tall is now a requirement for a goalkeeper at the highest level. The required speed and agility require that the goalkeeper's weight must be proportional to his height (athletic body type). The most characteristic types of goalkeepers are:

1. **Stationary goalkeeper – height over 190 cm, defends mostly using good positioning and range.**
The goalkeeper plays in front of the goal, always trying to cover the area of the goal as much as possible using his position, which is made possible by the size of his body. He occasionally loses contact with the ground or balance (jump or defence combined with a roll).
2. **Dynamic goalkeeper – 184–190 cm tall, his advantage is speed and dynamic performance.** He is always moving in the goal (advance, shift). Very good overall fitness and technical training allow the goalkeeper to undertake a variety of measures.
3. **Speedy goalkeeper – height around 180 cm, the need to make up for physical shortcomings (range) forces him to display very quick reactions.** Intervention mostly takes place in so-called first tempo, that is, without anticipation. He often defends in the air (jumping), or with a “flying save”. His strong suit is anticipation. Currently rarely seen in handball at a high level (Nowiński, 2002; Czerwiński, 1990).

Goalkeeper's body position

The goalkeeper's position is the orientation of his body in relation to the ground, goal and offensive throwing player, and is conditioned by the necessity of fast and free responses. All the movements in the goal should be performed according to the principle of a “screen” covering the face of the goal (arms, torso, legs). A ball deflected by the goalkeeper's hands should be retained, not bounced forward in a “boxing-tennis-like” movement.

Elbows should always be bent, forearms and hands diagonally forward. In order to feel at ease, the goalkeeper should minimize unnecessary muscle tension, as below:

- a) feet slightly apart at hip width; body weight should rest on the midfoot, with heels slightly raised. Feet should be parallel, with fingers pointing in the direction of the ball flight;
- b) position of knees and hips – looking at a correctly positioned goalkeeper from the side, his whole silhouette should be leaning a bit forward, legs slightly bent at the knee and hip;
- c) position of arms – shoulders and torso should form a kind of wide W letter, hands should be at shoulder height (goalkeepers approx. 190 cm tall and taller). Shorter goalkeepers should keep their hands at eye level; the arrangement of the arms in this manner is dictated by the fact that the distance between the arms and high and low balls in this position is the same and thus the probability of deflecting the ball is higher. Looking from the top, the goalkeeper's arms should form an arc, and the palms with their biggest surface should be facing the direction of the trajectory of the ball; the arms should be held forward in a way to allow the goalkeeper to see both hands while looking ahead (Nowiński, 2002; Norkowski, 2002).

Playing technique

Within the technique, three groups of issues corresponding thematically to three aspects of goalkeeper's play can be distinguished, namely:

- issues related to the methods of carrying out locomotor tasks, e.g. everything that has to do with goalkeeper's techniques of moving outside and inside goal area,
- issues involving handling equipment, e.g. techniques of catching, blocking, passing and throwing the ball,
- issues concerning reacting to throws toward the goal, e.g. techniques of the goalkeeper's intervention.

Examining the kinds of goalkeeper's movement, show the difference between the technique of moving within the playing area, where he must submit to playing regulations, and the technique of moving in the goal area, where he is not constricted by rules regulating his movement. The specific nature of the goalkeeper's play makes him operate mainly within the goal area, which should also be of main interest.

Techniques of moving include elements such as various forms of running, walking (variants of side shuffle), jumping, one-legged and two-legged jumps, various rolls, and any other forms of locomotion-related movements.

Generally, there are two ways of moving within the goal perimeter depending on the players' height (Figures 1, 2).

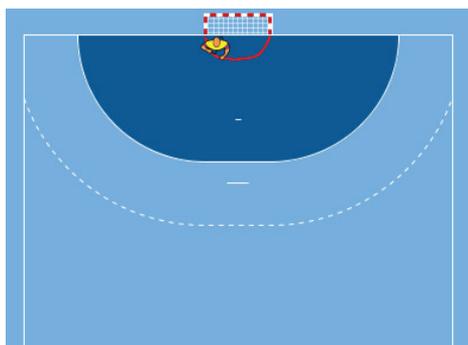


Figure 1. Tall goalkeepers move in an arc in the front of the goal, while simultaneously circulating the ball

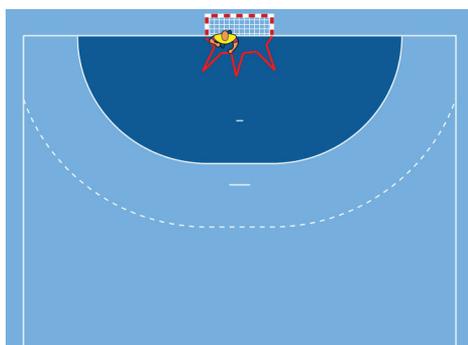


Figure 2. Shorter dynamic goalkeepers at every attempt on throw make a short leap forward and return to their line

Other ways to move in the goal include:

1. Moving forward – reducing the angle of the shot.
2. To the side – after the ball, prolonging the moment of taking a correct position.

Another very important issue is to teach young goalkeeping trainees to save high shots through jumping with the leg opposite the direction of intervention. Especially in case of throws out of the goalkeeper’s reach.

Operating the equipment refers to the technique of the goalkeeper’s contact with the ball in the goal area, which includes items such as catching, passing and dribbling the ball, bouncing or blocking the ball with the limbs and torso, and throwing the ball different distances.

The goalkeeper’s reactions also depend on the ball’s speed and trajectory.

While analysing defence techniques, the skills of a goalkeeper should be developed and varied, which is perfectly illustrated by Figure 4. It also confirms the necessity, complexity and comprehensiveness of the specialized training. Mastering all defence techniques and methods of moving in the goal takes time, careful planning and consistency in coaching.

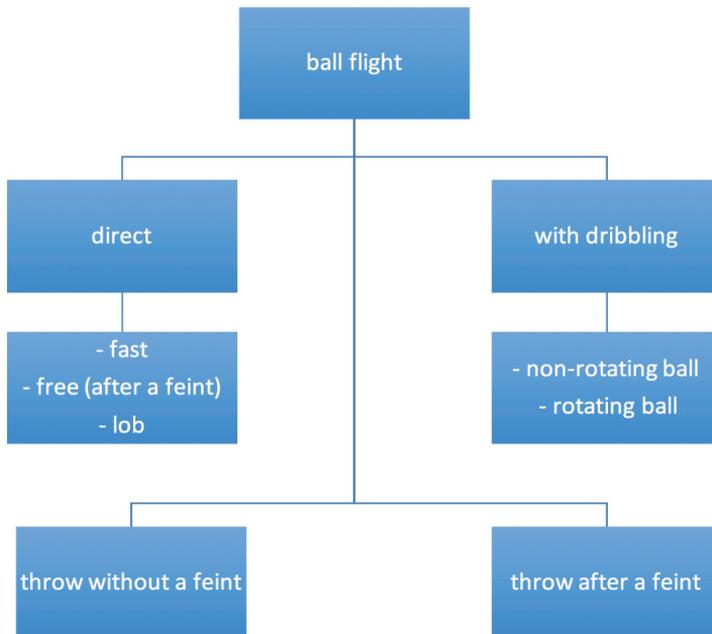


Figure 3. Circumstances of a handball goalkeeper’s intervention

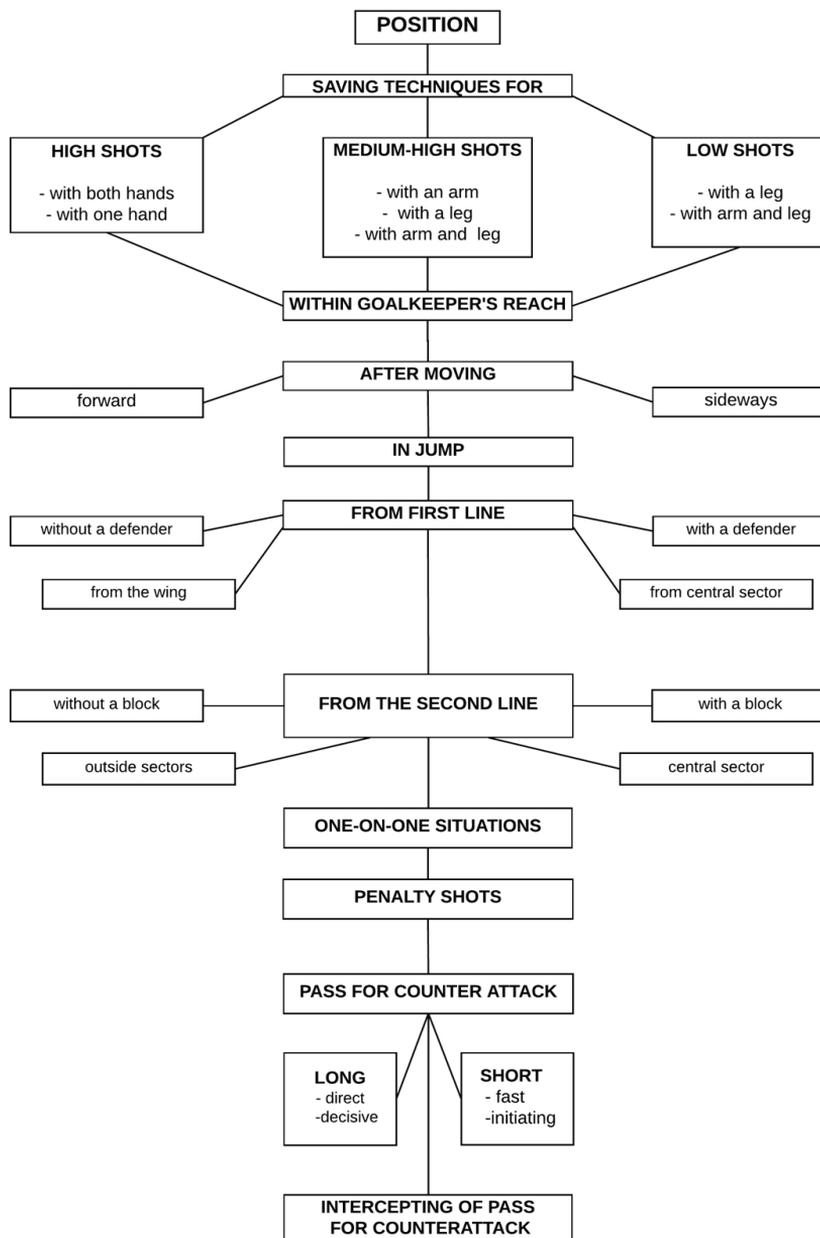


Figure 4. Individual skills of a handball goalkeeper

Cooperation between goalkeeper and defence

Regardless of his abilities, the goalkeeper tries to somehow predict into which part of the goal a shot is going to be directed. The choice depends on the situation on the court. Today we can say without a doubt that the best goalkeepers in the world are players over 30 years old. The ability to observe and analyse in an instant is the main asset of their experience. Every throw brings additional information. The trajectory of the thrown ball usually depends on the direction of the throwing player's movement, position of the hand with the ball and the presence or absence of a defender.

This latter information determines the block in the central sector in case of throws from the second line or in a presence of a defender, and the choice of intervention in the case of throws by a wingman allows the goalkeeper (even forces him) to choose the correct action. Defenders try to facilitate the intervention of the goalkeeper, through individual and team actions.

External defenders:

- a) pushing (in accordance with the regulations) the wingman to the outside and limiting his choice of shots;
- b) in the case of long shifts an attempt to return immediately and limit the wingman's "area of deflection" with simultaneous use of the hands (raising up) or falling under the feet, i.e. sliding tackle, which makes it difficult for an attacker to easily perform a high shot into the goal area.

Central defenders:

If it is not possible to stop the attacking player:

- a) maximum shifts (in contact with the pivot), which obstruct freedom of deflection or loss of balance (using the body in accordance with the regulations);
- b) attempt to block the hand, hindering the freedom to throw. This forces the pivot to deflect further and makes it impossible for him to feint (with a hand). This course of defender's action significantly reduces the attacker's operating time at the time of obtaining the throwing position (intercepting the ball – taking the position – throw).

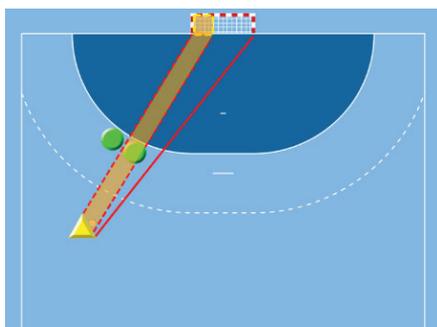


Figure 5. Reduction of goals using defenders

In teams with a low level of training, it is difficult to achieve cooperation and this often leads to confusion. Certain modes of action should be expected of blocking defenders, but they must be treated by the goalkeeper only as auxiliary.

In teams at the highest level according to the solutions adopted by coach or players, collaboration between the defence and the keeper is based on very precise rules and the full responsibility of each player.

It usually depends on the direction of the thrower's run-up and his position at the moment of the throw.

Often when the principles of cooperation prove to be ineffective, they are adjusted during the match. However, this requires of players a lot of experience and the ability to adapt (Nowiński, 2000; Nowiński, 2002).

Rules of goalkeeper's conduct — intervention

The fundamental issue in the process of goalkeeper training is teaching correct positioning in the goal, i.e. position in relation to the trajectory of the ball at the moment of the throw. The ball's trajectory towards the goal can be represented as a triangle whose apex is the ball and base is a line connecting the goal posts. The correct position of the goalkeeper involves a perpendicular alignment of the torso (hips) and feet in relation to the ball, so that the imaginary line connecting the centre of the goal and location of the ball runs centrally between goalkeeper's feet, which are pointing towards the ball.

The rules of handball goalkeeper conduct depend on the following factors:

- a) time that a player has to make a throw and observe the goalkeeper,
- b) space in the goal.

Three situations can be distinguished:

1. Sufficient time and large space
 - one-on-one throw (e.g. a counterattack),
 - penalty.

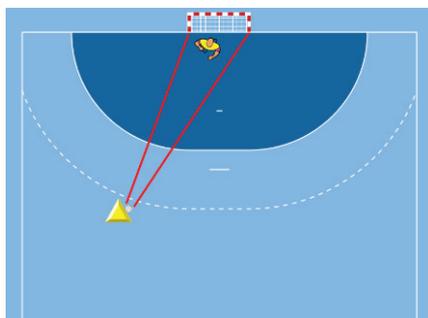


Figure 6. Sufficient time and large space

In such a situation the goalkeeper should keep attacking while misleading the opponent, who has time to observe his further actions, seek to provoke the enemy to throw into the spot chosen by the goalkeeper.

Courses of action:

- a) reducing the available area of the goal by moving forward, which forces the throwing player to perform a more precise throw, e.g. imposition of operating conditions;
- b) shift and exposing a part of the goal;
- c) numerous changes of position (penalty), lowered position in the goal and standing up suddenly;
- d) significantly raising the position – arms raised high up diagonally and sudden lowering at the time of a throw;
- e) positioning on one leg and rapid change of legs with a jump, assuming that the opponent will throw properly towards “the loaded leg”;
- f) jumping and changing the arrangement of the arms and legs in the air;
- g) standing with legs very wide apart and sudden joining of legs in the moment of the throw.

Most common mistakes:

- a) passive behaviour of a goalkeeper before the throw;
- b) constantly repeating the same method of intervention;
- c) stepping out of the goal prematurely and too far out.

2. Sufficient time and little space – *throw from the wing*

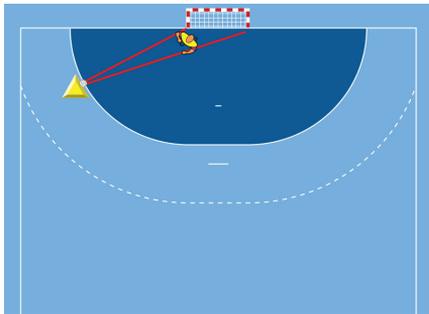


Figure 7. Sufficient time and little space – throw from the wing

Goalkeeper should:

- a) with proper positioning prevent shooting “through”, i.e. within goalkeeper’s range (e.g. into the short corner, next to the head, between or under the raised leg);
- b) wait calmly without making premature moves (after making one step forward with a foot closer to the post in order to cover the “short” corner of the goal);
- c) shift while watching the ball, basing the range of motion on its position, in a situation when a wingman tries to jump past the goalkeeper, increasing the angle of the throw;
- d) wait (after moving forward and shifting – both feet on the ground) with the intervention to the last moment, i.e. when the opponent does not have time and must throw towards the goal.

Most common mistakes:

- a) incorrect position, e.g. lowered hand next to the post, leaving space between the torso and the post, etc.;

- b) premature lifting of one leg;
- c) moving too far forward;
- d) rotating the torso;
- e) premature reaction, before shifting, allowing wingman to pass jumping goalkeeper.

At the top level of play, one can observe jumping on both feet with a shift forward-slantwise, while maintaining an upright posture. It becomes the primary means of defending throws from the wing. Goalkeepers wait to the last moment, and then suddenly shift with a jump, trying to use hands and torso to cover the surface of the goal. Both of the goalkeeper's feet are in contact with the ground. This replaces frequently used defence using positioning on one leg (closer to the post).

3. Insufficient time and large space

Throw from pivoting position (assisted by defenders) – player throwing from this position often has to – after catching the ball while sideways or back to the goal – to make half or full turn. Simultaneous pressure from defenders forcing him to act with maximum speed, therefore he does not have the time or possibility to carefully observe the goalkeeper.

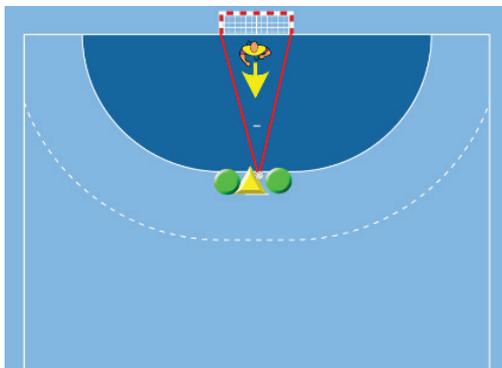


Figure 8. Insufficient time and large space

The goalkeeper should:

- a) move forward quickly while reducing the angle of the throw, using the throw to the pivot and the moment of the pivot's action with the ball;
- b) while moving forward keep the alignment in the line of ball – goalkeeper's torso – the centre of the goal (shifting if needed);
- c) try to reduce the goal space available for the thrower through simultaneous use of arms (upper corners of the goal), and one or both legs (lower corners of the goal) after waiting for the moment of the throw;
- d) in the case of throws from the side sectors, especially when a player is being pushed, one should not move forward too much;
- e) make it as difficult as possible to shoot into the place that the throwing player deflects towards, i.e. throw in a straight line (forcing the throwing competitor to "drag out" the throw).

The most common mistakes:

- a) late reaction (ball passes the forward-moving goalkeeper, who did not manage to get into position);
- b) positioning in front of the thrower's body and not the throwing hand. Ball out of the goalkeeper's range;
- c) premature lowering (legs wide apart, lowered hands) or raising (straight legs, hands up over the head).

Throws from the second line:

When defending these shots, there are two types of goalkeeper reactions. A well-trained player in this position should master both, and choosing one over the other is determined by the situation on the court. These are the defence along the goal line and moving forward:

- 1. Defence along the goal line – goalkeeper is positioned in the goal, the direction of the intervention is parallel to the goal line so that he has more time to observe the ball, but the area of the defended goal is bigger. Defence often used by smaller dynamic goalkeepers.

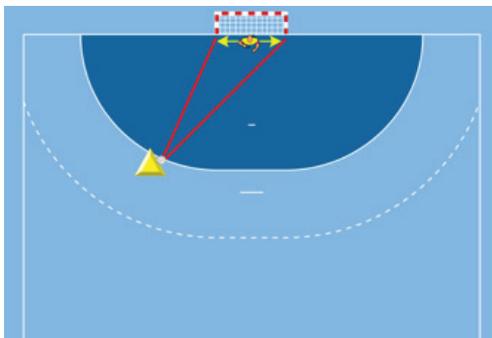


Figure 9. Defence along the goal line

- 2. Defence by moving forward – goalkeeper in front of the goal (moved forward), the direction of the intervention oblique to the goal line, shorter observation of the ball, but the goal space is limited by the positioning; this defence is more often used by tall goalkeepers playing positionally.

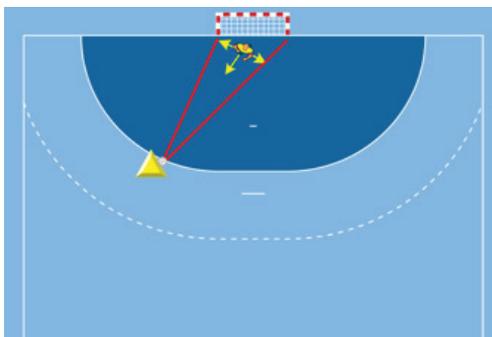


Figure 10. Defence by moving forward

Further premises when throwing from the second line are:

1. Throw performed after run-up in front of the goal – when analysing the situation, the goalkeeper can assume that the throwing player running perpendicular to the goal has a greater ease of throwing towards the closest post (it should be treated as additional information).

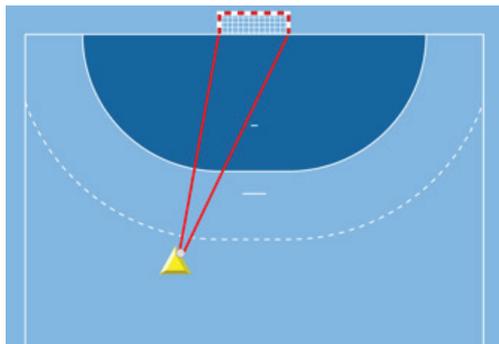


Figure 11. Throw performed after run-up in front of the goal

2. Throw performed after non-perpendicular run-up of a throwing player – in such situations, the goalkeeper can assume that the player moving parallel to the goal after crossing the centre will tend to perform throws towards the post closest to him, (of course it depends on many factors, among which the large role played by the degree of freedom and speed of a throw).

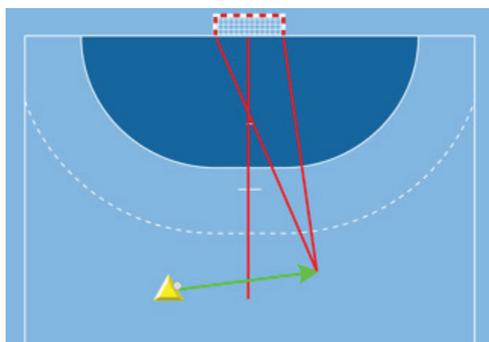


Figure 12. Throw performed after non-perpendicular run-up of a throwing player

Acting in situations of limited visibility of the throwing player's movements, which often occurs in the case of close contact with a defender, the goalkeeper should assume that the hand with the ball or the ball should appear in the gap between the defenders and it is there that he should position himself.

The above courses of action apply to all players at that position, regardless of how they play.

One should also distinguish between two different types of goalkeeper behaviour in the phase preceding the throw, i.e. static defensive actions and aggressive offensive actions.

1. Static defensive goalkeeper – waits for the action of the throwing player while retaining position and adjusting the position in relation to the ball, tries to intervene at the last moment; he leaves the choice of the place of a shot to the thrower, but, in turn, limiting the space in the goal often allows for effective defence.
2. Aggressive offensive goalkeeper – anticipates the throwing player's action, trying to force him to change his decision, goalkeeper induces uncertainty in the attacker's actions and in a sense provokes him to shoot in the direction the goalkeeper chooses; such behaviour often proves to be effective, but it requires a lot of control of the situation by the goalkeeper, and too far-reaching provocative actions may make proper intervention impossible.

Organisation of training

Training methods

The variety of situations during the game require that a goalkeeper presents a high degree of specialized skill, courage and the will to fight. The specialized skills include special speed, innate and developed reflex, which is one of the most important factors influencing the effectiveness of the goalkeeper's performance. Goalkeepers' movements are the result of responses to visual signals, i.e. incoming ball, throws performed by a shooting player and power. Dexterity and agility are required from a goalkeeper not only for the purpose of effective defence, but also in order to avoid injuries. Flexibility is particularly useful during interventions requiring a large range of movement of the joints. Stamina allows the use of all the technical measures during the whole match, and further facilitates concentration. Goalkeeper training should include methods (repetitive, variable, interval, intense variant in particular, starting, continuous), which reflect the specifics of playing in the goal. The specificity of the goalkeeper's function requires the development of high non-lactate anaerobic capacity, characterised additionally by a highly efficient regeneration of utilised energy substrates (Norkowski, 2002).

Forms of training

All movements in the goal should be performed according to the principle of a "screen" covering the face of the goal (arms, torso, legs). During training one must remember to properly develop both the tactical and technical skills of the goalkeeper. It must also strongly emphasize the diversity and accuracy of selection of the technique. Goalkeeper training should include four different forms of training:

1. Specialised training – separate, only with goalkeepers. Emphasis: performance-oriented, technical and high-speed.
2. Individual training with the team:
 - different tasks during training from other players in specific time units,
 - practice is either led by a second coach or goalkeeper exercise alone (under supervision of a coach) after receiving individual tasks.
3. Throwing training with the team:
 - planned series of throws,
 - throws from position without a defender,
 - throws in parts of the game (with a defender).

The coach should immediately correct mistakes regarding positioning, technique or premature anticipation.

Game or attack-defence parts:

- individual tactics of the game,
- cooperation with the defence,
- throwing for quick attack.

The next stage of the goalkeeper's know-how is anticipation of false information – provocation.

Anticipation. Goalkeeper intervention precedes the throw. He starts to move before the ball leaves the throwing player's hand. The direction and method of intervention chosen by the goalkeeper should be the result of an analysis of the situation on the court (block, the position of the throwing hand, the position of throwing and defending players). Often, they react knowing the habits of a particular attacking player.

False information – provocation. This includes actions such as deliberately exposing part of the goal (e.g. a short corner when shooting from the wing) or starting a movement or intervention to signal a planned action and immediate changing the action (Nowiński, 2002).

Conclusions

1. Changes in a goalkeeper's technique, his physical and mental preparation are ongoing, forced by the increasing power of the throw, speed of the game, improved players' throwing capability; throws with rotation and other technical innovations involved in this element:

- a) deflecting balls thrown in the upper areas of the goal with both hands, not only within the goalkeeper's range, in order to cover a bigger area of the potential shot;
- b) blocking the lower parts of the goal with the whole body through a dynamic shift on the legs and sitting with legs apart with the hands above the legs or defence through half-split with dynamic shift on the legs in the goal's area into which the shot will be directed;
- c) forcing the throwing player to perform a more difficult throw (straight line throws are defended);
- d) cooperation with the attackers;
- e) during counterattack (one-on-one situation) this is particularly evident with the Danish and Swedish goalkeepers: at the moment of the throw, the goalkeeper dynamically sits with legs apart and hands raised above his head; this is due to the fact that in this
- f) situation the throwing players are aiming at the lower parts of the goal (statistical calculations).

2. The goalkeeper's tasks are not only limited to defending the goal. He participates in launching a quick attack or quickly resuming play after conceding a goal.

3. The goalkeeper's training should be varied in order to mobilize the body's full energy potential and shape the elements of the technique.

4. Selection: goalkeepers should be intelligent, courageous, endowed with the excellent physical condition and above all physically fit.

In conclusion, one can recall the statement of one of the best goalkeepers in the history of handball, multiple medallist of the World Cup and Olympics, Yugoslavian/Croatian Mirko Bašić: "in order to be a quality goalkeeper one has to have technical and tactical skills, and physical and psychological advantages built up to the maximum, but intelligence and composure are necessary and most important".

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