

Generating Power: The Force Within You



By Max Langmack

Max Langmack is a WPH ranked pro and Collegiate All-American who is known for his powerful handball shots. He shares tips that help generate power.

Talking with any handball player, one soon hears the sport compared to chess. The comparison is apt in many ways: Like chess, handball requires a player to maintain his emotions throughout a match and continually determine optimal positioning within the field of play.

Yet this analogy presents a false equivalence. On a chessboard, both players start with the same number of pieces, in mirroring positions, with each piece adhering to the same movements as its counterpart. For example, a queen (black or white) can move any number of spaces in any direction, making it the most powerful piece on the board.

In handball, players walk onto a court with their mental *and* physical abilities in tow. Imagine how a chess player’s decision-making would change if his queen could only move two or three spaces at a time while his opponent’s could move across the board any number of spaces. How would this change the game?

Handball embodies this dynamic, and



A strong lower body with bent knees helps the player channel the force from the ground into their shot.

it is, therefore, important to focus on the principles that improve shot quality. Just as no one would choose to start a chess game with a queen that could only move two spaces to his foe’s many, no handball player would opt for a softer power serve than his opponent’s. A good swing is three things:

Consistent A swing that can be repeated with the same result.

Effective A swing that sends the ball where the player wants it to go and puts pressure on an opponent.

Comfortable A swing that does not place undue strain on the arm or lead to injury.

The CEC of handball — I have yet to come up with a better acronym after 13

years of playing — is instructive. Without consistency, a player may hit a flat roll out one rally and set up his opponent the next: a dubious way to score points in a match. An opponent will track down slow passes and high kills. Without comfortable swings, a player will find his effectiveness diminished, either owing to fatigue from the immense effort expended or, worse, from an injury incurred from putting so much strain on the body with every shot.

Power is an integral part of hitting consistent, effective shots. Imagine a player hitting a ceiling or kill shot from his knees in the backcourt — most of my such attempts do not make the front wall or barely graze it (as my opponent would

Table	Short-Term Effects	Long-Term Effects	Conclusion
Consistent	Shots may change slightly as the player adjusts for new power.	Player adjusts to power and consistently hits shots.	The player’s understanding compensates for extra power. Negligible effect.
Effective	Harder shots may induce more errors from the opponent, but increased effort may lead to more errors from one’s own game over the course of a match.	Same as short-term “effective” effects.	Harder shots can mean more points but also more errors when “swinging harder.” Negligible effect.
Comfortable	High stress placed on the shoulder and arm can lead to strains and small injuries.	Repetitive strains and injuries can lead to long-term problems and threaten the longevity of a career.	“Swinging harder” often leads to injuries that can have a long-term effect on a player’s performance. High negative effect.

prefer to my regular kill or ceiling shot).

Properly harnessed, power obliges an opponent to expend more energy per rally by propelling him into hurried steps to retrieve darting shots. Power reduces reaction time, potentially inducing an error, mishit or weak return. Deployed throughout a match, power can help one wear down an opponent and earn easier points.

Yet utilizing power effectively takes practice, as it amplifies a shot. It is the difference between listening to a song on the lowest volume on one's phone and standing in the front row at a concert.

A player who has dialed in a power serve to the left side that drops into the corner might find that emphasizing power causes his serve to suddenly wrap around the walls, giving an opponent a revolving-door opportunity (often to his strong hand). Similarly, one with a dynamic passing shot might find that adding power leads to more back-wall setups for his opponent. Even hitting cross-court kills or passes with more power can cause the ball to check up the side walls, offering another possible setup.

While this can be frustrating, a few tweaks can lead to faster, harder shots that are just as effective as before. Hitting the ball lower on the front wall often compensates for this difference, as the change in power accounts for the difference in height in terms of where the ball bounces and lands on the court.

Oftentimes a player thinks he needs to swing harder and quicker with his arm, shoulder and hand to generate power. To analyze this, using the CEC method, from a short-term (2-3 months) and long-term (6 months to 3 years) perspective, I have identified general observations about "swinging harder" (See *Table*).

Note that the information in the table is not based on empirical data but, rather, observations and conclusions derived from my playing career. Rarely have I seen a player who just "swung harder," without changing his approach to the game, achieve long-term improvement.

The reader is probably wondering, "Well, if I don't swing harder, how can I generate more power?" The way to generate more power is to engage the main muscle groups more when swinging, especially the legs, hips, core, chest and back. The aim is not to strain

these muscles but to involve them in a coordinated way to make a swing stronger.

Power is generated from two sources: the force one effects from his body and the transfer of that momentum to the ball when moving into a shot. Let's examine each in turn.

The force generated from the body starts with the contact of the feet with the ground. Underlying this force is Newton's third law of motion: For every action (force), there is an equal and opposite reaction. This scientific law is realized when a player uses his legs to drive into a shot. The legs push into the ground and the ground pushes back, generating the force that will eventually be imparted to the ball through the body.

Imagine playing handball aboard the International Space Station. Aside from the non-standard court dimensions, surprising bounces due to the lack of gravity and the incredible retrievals enabled by the absence of gravity, the speed and power of the game would slow down as both players floated in mid-air, weightlessly. To generate power, one would have to cling to a wall or floor to hold himself in place and to push against while hitting a shot.

Fortunately, gravity exerts a grounding force on Earth. But there

are still things to remember when thinking about generating power from the contact of one's feet with the floor.

The basic sidearm and overarm handball swings employ a similar stance to baseball in which a player turns his feet so that the toes point toward the sidewall. Feet should be slightly wider than shoulder-width apart to provide a stable base, with the knees bent. One should feel balanced, first, and then slightly shift his weight onto the back leg, which should feel "heavier" or "grounded," as if more force is being applied to it, without compromising this balance.

This weight shifting prepares the player to push down through the back leg and the ball and the internal arch of the foot into the ground, which propels the leg, hips, upper body, arm and, finally, hand forward and into the ball with force. The front leg, balanced but bearing less weight, steps forward and, once on the ground, absorbs much of the force transferred from the back leg. Being stable and balanced when stepping into a shot gives one a better chance of hitting the ball hard by minimizing the amount of energy lost in its upward transfer, through the hips and upper body, to the arms during the full motion of a swing.

One should feel the quadriceps, abductors



Closing off the front shoulder and putting weight on the back helps generate extra torque when the weight is transferred forward.



Activating the core while pulling back with the hips helps channel the power from the legs and ground up through the arm.

and hamstrings firing and generating this power as the back foot drives into and pushes against the ground. The gluteal muscles should be firing and helping to balance the player as he steps into his shot. As the muscles fire and the player drives forward, the front leg should absorb the force generated by the back leg, and the quadriceps and hamstring of the front leg should gradually bear more of the propelled weight.

The force generated by the legs must be channeled into the arm and hand to relinquish it on the ball. The hips and core transfer power from the legs to the upper body. One should feel balanced and stable at all times. The hips are the key to shifting weight back and forth when driving the legs into the floor.

The core abdominal muscles (abdominals, obliques) are a strong muscle group drawn upon for everyday activities. Engaging them generates a lot of rotational force and, therefore, power to be transferred to one's swing.

Preparation and timing are also critical. When loading weight onto the back leg and into the back hip, while maintaining a

balanced and stable stance, one can twist the abdomen so that the front shoulder turns away from the front wall. This twist allows one to increase his range of motion while also contracting the abdominal and oblique muscles to store energy, which becomes force when one rotates in conjunction with the drive of the legs. Every player's abdominal range of motion is different. Developing this rotation can take practice, and players should take their time to forge this awareness within their swings.

Stepping into the shot, generating power from the ground, the player engages his core and rotates so that the shoulders open up and the chest finishes by pointing at the front wall or left knee (whichever point is more comfortable). The upper body, shoulder and arm will follow and eventually overtake this initial rotation as the swing unfolds.

An additional source of power is the interplay of the hips. At the midway point of the rotation (so that the abdominal muscles are pointing at the side wall), the player can pull back slightly with the left hip to give the abdominal muscles a point to push against. Doing so can aid stability and encourage

the continued engagement of the core muscles in tension with the stable lower body base, creating more torque. Again, the player will want to build this awareness slowly and gradually so the body can adjust if this is a new movement.

From here, the power generated from the legs, hips and core should flow into the upper body, specifically the back, chest, shoulder and arm. Just as the player prepared his lower body and core, he should prepare his upper body to use the force generated by the other muscle groups.

To do so, raise the arm to form about a 90-degree angle with the torso, with the elbow bent and hand cupped. This position should be comfortable, and the player should feel the chest, shoulder and arm muscles engaged. Failing to prepare one's arm before taking a shot almost always results in poor contact or places undue stress on the shoulder and arm, whereas a prepared arm harnesses strength from the back and chest — major muscle groups that provide stability and lend power to one's swing.

Utilizing these muscles is necessary for a safe follow-through of the arm. When the shoulder is responsible for slowing the arm after the ball has left the hand, injuries occur. The more one can recruit the back and chest, the easier it is for these muscles to absorb the force of the follow-through. The arm should also be stable yet fluid throughout the swing. This may seem like a contradiction, but, with practice, players will find the balance. The other arm should be prepared in the same way and can be used as a lever to help the core rotate and the player stay balanced.

The last step of the swing is to impart all the force generated from the body into the ball via the hand. If one has generated and channeled the force from the lower body and core up through the upper body and into the arm, the focus of the hand should be to make contact with the ball. Clean contact with a cupped palm, and sound fundamentals from the rest of the swing, will allow one to relay the power he has generated into the shot.

Keeping the pinky-side of the hand flat so that it points to the floor provides for crisp contact. To maximize power, keep the hand flat all the way through the swing (unless trying to put a spin on the ball) and follow through to the front wall. The flatter one can hit the ball, the more power he will impart.

Power amplifies the purpose of a shot. If a player hits the ball at a downward angle when it leaves his hand, that power will drive the ball into the wall and then the floor, causing it to bounce back up and giving an opponent a better opportunity to retrieve it. Conversely, hitting the ball upward with power increases the chance of overhitting and either furnishing a back-wall setup (in four-wall) or hitting the ball out of bounds (in three-wall and one-wall).

If a player can hit the ball flat into the front wall, the ball will maintain more of its power and will touch the floor on the rebound with more of a grazing action, leading to low and powerful shots. This is the principle behind hitting a roll out.

With all this in mind, a player can hit powerful shots consistently, effectively and comfortably by using his entire body and the ground to impart power upon the ball. It is worth noting that, while this article has spent paragraphs examining

the mechanics of power generation, each shot one hits will take seconds from start to finish. Orchestrating all parts (feet, legs, hips, abdominals, back, chest, shoulder and arms) to work together in an instant only comes from practice and learning how to use one's body to maximum effect.

It is impossible to play consistent handball while trying to make changes with each swing in a game. Players must practice these principles to make them habits. Then the body can execute intuitively, leaving one to focus on the ball and strategy.

A player can work on these mechanics by dropping the ball in front of himself and hitting it with a one-step swing straight to the front wall. When practicing this drill, it is important to emphasize the one step, as many players will take little steps to creep up on the ball without realizing it. This undermines efforts to drive through the back foot and frustrates awareness of using the floor to generate force. From there, one can

progress through different shots, minding his strength and mechanics.

The stronger one's body, the more force he will generate from the ground and his rotation. Strength training can therefore add power to one's game, and proper mechanics will help maximize that which is transferred to the ball.

In truth, transferring momentum to the ball requires more than a simple step-and-hit. But to adequately generate and transfer momentum, one needs sound fundamentals, as described above. In top-level matches, where players are deft with both hands and boast elite mechanics and strategy, sometimes the key to winning a rally is to force an opponent to hit the ball from a stand-still or from his back foot, inducing a good but weaker shot that a top player can take advantage of.



Raising the back elbow when preparing to hit the ball helps activate the back muscles and draw power into the arm.

The Shuffle

Once a player feels confident, consistent and comfortable in his step and form, he can introduce a shuffle step before his swing. This is easily practiced by tossing the ball softly off the front wall and then shuffling up to meet and hit it.

The shuffle step is simple. A player stands with his feet facing the side wall and moves forward by pushing off his back foot and catching himself with his front. It is the same motion used to step into the ball. The difference lies in the timing.

Standing farther back from the ball and taking an extra shuffle before swinging generates momentum into the body — an extra force that, with good mechanics, can be imparted to the ball.

One must develop keen anticipation of what height the ball will bounce to and where he would like to meet it. It is impossible to give this much thought during a handball match. Building habits through practice is the best way to translate this skill into a game.

Unfortunately, for those looking for quick ways to generate power, there are no answers. By practicing the techniques discussed here, players can hone and develop power in their swings and continue to raise their level of play and challenge tougher opponents. Until then, happy hitting!