HOW TO... PUMP?

PROPELLING YOURSELF WITH TURNS

PUMPING
POWER-TURNING
OR GYRATING

a re-edited version of Dan's classic how-to article, written way back in 1989 when almost nobody in the skateboard world cared about this subject!

PAR/BY > Daniel Gesmer PHOTOS > Robert Kittila

PROPELLING YOURSELF WITH TURNS (*PUMPING*, *POWER-TURNING*, OR *GYRATING*) IS AN EXTREMELY SUBTLE TECHNIQUE, BASED ON VERY PRECISE, BALANCED, AND RHYTHMICAL WEIGHT SHIFTS. BEGINNERS OFTEN OVERLOOK THE SKILL INVOLVED BECAUSE IT SEEMS ALMOST EFFORTLESS WHEN DONE WELL. YET POWER-TURNING IS ONE OF THE MOST DIFFICULT TECHNIQUES YOU CAN LEARN ON A SKATEBOARD. IT'S ALSO ONE OF THE BEST TEACHERS OF TRUE STYLE, AND PROBABLY THE FINEST EXAMPLE OF USING A SKATEBOARD TO "SKATE" IN THE PUREST SENSE OF THE TERM — TO GLIDE POWERFULLY.

POWER-TURNING IS SOMETIMES KNOWN AS GYRATING BECAUSE, WHEN DONE PROPERLY, YOUR BODY AND BOARD GYRATE RELATIVE TO ONE ANOTHER – YOUR HIPS ROTATE ELLIPTICALLY IN ONE DIRECTION, WHILE THE SKATEBOARD BELOW ROTATES IN THE OPPOSITE DIRECTION. IN BIOMECHANICAL TERMS, PUMPING IS ONE OF THE MOST COMPLEX TECHNIQUES IN SKATEBOARDING. AN ELABORATE EXPLANATION IS REQUIRED. READ CAREFULLY, AND TRY TO VISUALIZE WHAT YOU READ.

EQUIPMENT AND MINIMUM SPEED

Unfortunately, the trucks on pre-assembled longboards are rarely good enough to pump well. Your trucks should make smooth, tight turns and be loose enough to steer easily. Decks with moderate or no flex work best; avoid boards with excessive vertical or torsional flex. Your wheels should be reasonably fast and grippy. Buy quality gear that performs.

The longer your wheelbase, the faster you need to roll to start pumping. The average rider on an average board needs to get going about 5-6 mph – a bit faster than top speed kick-turning from a dead stop on flat ground. Current truck designs make it nearly impossible to gyrate effectively at lower speeds.

STANCE AND POSTURE

Slalom racing is essentially the art of gyrating as fast as possible while weaving through cones. In the 1960s, '70s and '80s, most slalom racers used a semi-parallel stance, half-way between surf-style and parallel ski-style positions. In the modern era, more top racers use a standard surf-style stance, which has the advantage of letting you integrate gyrating with other moves on varied terrain.

Place your rear foot on top, or slightly in front, of the rear truck, and angled perpendicular to the board's long axis, or slightly forward. Place your front foot slightly behind the front truck and angle it forward 15-30 degrees. Keep your knees bent, weight evenly distributed, back straight, arms relaxed and extended. Your pelvis should be turned slightly forward, so it's square with your front foot. Let this small forward twist continue up your spine, so you're facing where you're going.

As you bend your legs to lower your center-of-gravity, keeping your back straight is increasingly difficult, but increasingly vital to efficiency and power. Think of lifting your upper body out of your hips, by scooping your abdomen in and up from the groin level. Feel your weight pressing straight up from your heels, and imagine a cord pulling your head toward the sky.

WEIGHTING AND UNWEIGHTING

Before continuing, you need to understand *weighting* and *un-weighting* (also known as *compressing* and *de-compressing*). These are critical concepts for virtually all high-performance skating. The world's most powerful and skillful riders are those who've thoroughly mastered weighting and un-weighting.

Weighting means putting weight onto your board, more even then your actual body weight. Let your weight start to drop, then catch yourself and quickly push back upward. When you pump down a transition, you're weighting your board. Weighting also increases traction, which helps you steer more quickly at speed.

Un-weighting means taking weight off the board. This isn't a jump, but a matter of slightly lifting your body – so it's momentarily suspended, with little or no weight flowing through your legs. You start by simply pushing up with your legs, but it's critical to follow through with your abdomen – stretch your stomach upward, quickly and forcefully, after the leg thrust. This adds length and control to the weightless phase. Un-weighting is essential for skating up transitions and for maneuvers like power slides. (You have to take weight off the wheels before they'll let go.)

Old-style (non-digital) bathroom scales can help you gain a sense for weighting and un-weighting. If you're compressing properly, you'll see the needle swing beyond your actual bodyweight. If you're de-compressing properly, you'll see the needle swing toward zero, even with your feet touching the scale. Try controlling how fast the needle swings. Depending on the situation, you need to weight and un-weight at different speeds. For instance, on a large ramp, you compress and de-compress more slowly than on a small ramp.

Of course, it's impossible to weight without first un-weighting, or to un-weight without first weighting (unless you let yourself free-fall). This is as it should be, because weighting and un-weighting work together on the board.

FRONTSIDE (toeside) VS. BACKSIDE (heelside)

We must also clarify the names used to indicate the direction of skateboard turns. These depend on the setting: flat/sloped surfaces vs. banked/vertical terrains. For example, on flat surfaces and hills (the usual settings for power-turns), steering toward the front of your body is called frontside (toeside in snowboarding). On banks, ramps and pools, as in surfing, a kick-turn toward the front of your body is called backside, since your back faces the wall (or wave).

For ease of understanding, I'll break things into two parts, pumping frontside and pumping backside. When you're really gyrating, the two merge into a single technique.

THE FRONTSIDE (or toeside) PUMP

To pump frontside (toward the front of your body), prepare by carving slightly backside. (More than half your weight should be over your rear heel, and your pelvis should be turned toward your back.) Next, weight the board (see Photo 1). Then, in a smooth, coordinated manner, do three things simultaneously (see Photo 2):

PHOTO 1

PHOTO 2

1. Drive your center-of-gravity slightly forwards at a diagonal, so the majority of your weight moves from your rear heel to your front forefoot. At first, it's easier to think of pushing off your rear heel.

2. Thrust your pelvis to add snap to the weight shift and help bring your torso to a more upright position. As you do so, twist your hips slightly frontside, and let the twisting momentum flow gently through your torso and arms.

3. Decompress, or un-weight. If you do the first two steps properly, un-weighting becomes a natural follow-through. Just remember to use your abs to accentuate this step.

It's essential to center and control these movements with the muscles in your hips and abdomen. Imagine that your lower abdomen is the strongest part of your body, and try to feel that you're "pulling" your pelvis – and the skateboard – with your stomach muscles. This may seem confusing at first, but with time it'll become comfortable and natural.

It's tempting to center the motions around leg thrusts, but your pump will be less powerful and efficient. Leg action should follow and accentuate the motion that's centered in your hips. If you're using your hips properly, your legs will naturally add their power. Imagine that it's your pelvis, not your feet, riding the board, while your torso rides atop your pelvis. Don't forget posture – feel tall and lifted, even though your knees are bent.

THE BACKSIDE (or heelside) PUMP

To pump backside (toward the back of your body), prepare by carving slightly frontside. (More than half your weight should be over your leading forefoot, and your pelvis should be turned toward your front.) Next, weight the board (see Photo 3). Then, in a smooth, coordinated manner, do three things simultaneously (see Photo 4):

PHOTO 3

PHOTO 4

1. Drive your center-of-gravity slightly rearwards at a diagonal, so the majority of your weight moves from your front forefoot to your rear heel. (Photo 4) At first, it's easier to think of pushing off your front forefoot.

2. Thrust your pelvis to add snap to the weight shift and help bring your torso to a more upright position. As you do so, twist your hips slightly backside, and let the twisting momentum flow gently through your torso and arms.

3. Decompress, or un-weight. It sounds strange to drive your weight backwards, but following these steps will actually accelerate you forward. Again, center the action in your hips and abdomen, and don't slouch.

PUMPING IN CIRCLES

It's very helpful to practice pumping in large circles, so you can focus on learning to pump in one direction at a time. Just remember to reposition for each successive power-turn by steering slightly in the opposite direction. If you have enough room, try pumping in Figure 8s, too.

GYRATING

To really get the pump going, you must seamlessly connect frontside and backside power-turns. Then they become a single integrated motion – a gyration. On the horizontal plane, your pelvis should move along an oval or elliptical path, whose long axis cuts diagonally through your deck (see Diagram 1). At the end of one decompression, your weight will settle, or compress, and become the start of the next decompression. You must precisely coordinate foot-to-foot weight shifts, twisting hip snaps, and the cycle of weighting and un-weighting with definite points along this path.

It may seem like you need to remember an impossibly long list of steps. But with practice, the technique assumes a natural, organic rhythm. And you'll start to feel that you're powering your skateboard mostly with your lower abdomen. As you get better, you'll be able to gyrate while turning primarily in one direction – in this case you'll be pumping more powerfully to one side, but you'll still be gyrating.

THE PHYSICS OF PUMPING

The energy of the pump comes from weighting and un-weighting, which create centripetal forces. If a force is applied to push or pull a turning object toward the center of the turning circle, the object will accelerate – its velocity along the turning arc will increase. When you drive your weight upward as you diagonally shift it during each half of the gyration, you generate a centripetal force. Through the wheels' grip, you've pushed against the riding surface. The ground resists the pressure you've applied and, in effect, pushes you back. A component of that push is directed toward the center of your turn – therefore, you accelerate.

A simpler (though incomplete) explanation is that you've pushed (through the wheel grip) off the ground, while steering the board to follow in the direction you've pushed.

As you improve, try tighter trucks for greater power. You'll have to weight the board more to make the trucks turn, and you'll generate larger centripetal forces when you gyrate. It takes greater strength and endurance to pump with tight trucks, but you'll feel the difference in greater speed and acceleration.

Dan's eyes are squinting because of bright sunlight, but why is his mouth hanging open? Pumping strokes are quick, and timing these pics was challenging. Dan cued the photographer by yelling "Now" at the appropriate moment of each stroke.

RACING VS. THE ZEN OF IT ALL

I don't recommend gyrating as fast as slalom racers, unless you aspire to compete. Slalom racers reach high speeds, but the amount of power they generate with each pump seems to diminish as the rate of gyration increases. To maximize gyrations-per-second, they usually tense their upper bodies a lot, too. For me, power-turning is more enjoyable at a slower pace. You can still generate great speeds, and in my opinion, the feeling of power you get from a more concentrated gyration can't be equaled.

Gyrating lets you link moves without taking a foot off to push. It looks damned smooth and feels incredibly cool. You may even find pumping addictive. It's a truly magical feeling to propel yourself indefinitely, without ever touching the ground or lifting any wheels. Enjoy!

PATH OF PELVIS DURING GYRATION (EXAGGERATED FOR CLARITY)

DIAGRAM 1

The lines at the corners of the ellipse indicate the approximate axis of your hips at each extreme of the gyration. This axis should fluidly alternate in perfect rhythm with the gyration.

Your center-of-gravity moves beyond the edges of your feet and board. Relative to your body, the board moves in an oppositely-directed elliptical path – thus the term "gyration."