Tecnica-Skwal© (Advanced Level)

by Obi One

Summary

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Skwal base position

Feet are lined up in close stance, facing forward the tip of the *asse*, the skwal. The heel of the front foot almost touching the toe of the back foot, or so close that the back knee could still easily fit in-line with the front knee, that is, it would perfectly line up behind the front knee. Legs are close and aligned facing forward the direction of movement. The weight is equally and centrally spread over both plantar arcs of the feet. Both legs are slightly flexed and the bust is relaxed, slightly bent forward. Arms are extended externally. The palms are open and "looking for" the snow. See Figure 1 and Clip A.

Figure 1 – Skwal base position

Clip A: Skwal base position for Tecnica-Skwal© (select minutes 6.34-6.44)
http://www.youtube.com/watch?v=MgEgGScjnAg

Three Units

The skwaler positions and movements are a function of the interactions across three main body parts. These parts are described as follows:

Bust Unit: shoulders.chest.waist.hips
Support Unit: arms.forearms.wrists.hands
In-line Unit: legs.knees.ankles.feet

Bust and s*upport unit* are "frontal", facing forward naturally to the direction of movement together with the *in-line unit* which interfaces the skwal by the feet (see Figure 1).

Frontal Carving and non-rotation

Like in skiing, turns are always generated *in front* of the skwaler, *facing forward* to the chosen trajectory. You turn *facing forward* directly into the next turn, that is, you generate a *frontal carving*. It is neither necessary nor useful, like in alpine snowboarding, to 'search for', 'activate' or 'charge' a turn by rotating the upper body parts of the bust unit (shoulders, chest, waist, hips) over the lower body parts (legs, knees, feet) of the in-line unit. The anticipatory rotation of the upper over the lower body parts could be effective on a limited number of situations like extreme trajectory change or intentionally forced turn transitions (e.g., GS or SL race conditions).

Feet action

Skwaling (like skiing) requires the full use of the lateral part of the feet to ride and carve on the edge. *Thus, for every turn the whole side length of the feet is charging one the edge*, as opposed to snowboarding where only (or mostly) toes (in front-side) and heels (in back-side) charge the edges alternatively. This unique feet action by a skwal takes on relevance in terms of stability, riding and equilibrium.

Soles of the feet

The soles of the feet have a key role, being very sensitized. They play a fundamental action to "keep rooted" the skwaler to the snow (Balmain, 2007). When we lose such roots by lacking contact between the ground and centre of the soles of our feet, instability results (Balmain, 2007).

Get on a skwal: Hard boots (vs Soft boots)

Skwal is 99,999 % hard-booters, ski or snowboard hard-boots: pistes are for hard-boots. However, one may think of getting on a skwal with soft-boots (bindings and snowboard soft-boots). The important thing will be then the right skwal selection, fitting in with this approach. It could be very interesting for powder snow, free-riding, jumps and flips, as well as an easier entry for skwal beginners. See Clip B here below.

Clip B – Soft-boots and skwal
http://www.youtube.com/watch?v=YGCx8tW5f6I

In the future (resembling the past) skwal and soft-boots could provide this sport with a new dimension. Let's wait and see…

Ski-poles

Use of ski-poles is useful for beginners, especially to keep one's balance and correct posture. However, ski-poles are also used by advanced skwalers. The technique described here (Tecnica-Skwal©) does not consider ski-poles, but does promote their use especially for skwal beginners.

Snow-side and Free-side

The three body units (see Three Units section above) have two parts involved in every turn. The *snow-side* represents the entire side of the body approaching the snow during a turn. The *free-side* is the opposite side of the body. This is shown in Figure 2. Riding on the flat base the two

parts are functionally the same. In general the *side of the body* describes all the three units together (bust, support and in-line units).

Body lateral continuity

The upper body part, the bust unit, does not bend *sideways* with respect to the lower body part, the in-line unit. The concept is to maximize a solution of carving with a full *body lateral continuity*.

Figure 2 – Snow-side/Free-side and *body lateral continuity*

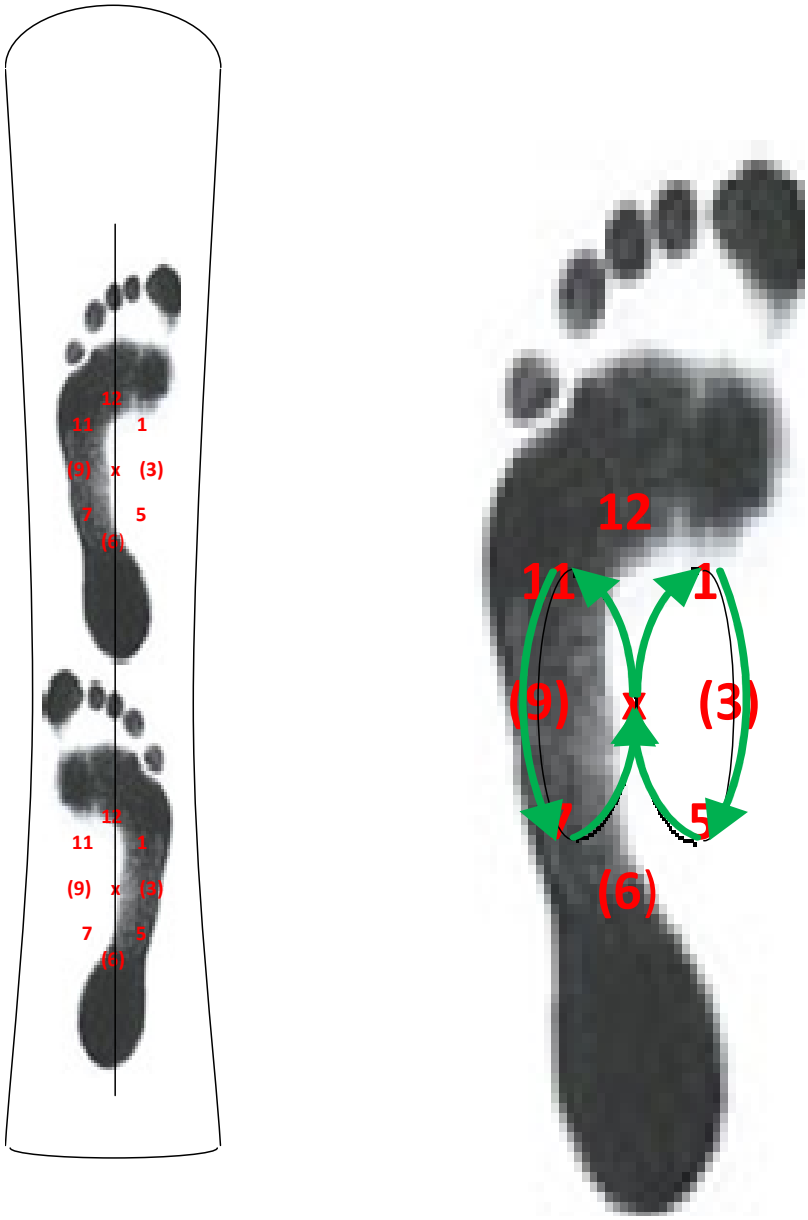
Feet-clock

A skwaler generates trajectories facing forward the direction of movement. Trajectories and changes are carried out by a differential distribution of the body weight over the longitudinal and lateral axes as well as by shifting the barycentre along the vertical axis. The weight is spread equally over both feet. Specifically, the weight is distributed over specific zones of the plantar arcs of the feet here called *feet pressure points*. In order to generate body weight movements and barycentre changes, the feet pressure points vary as a function of the desired trajectory according to a model here called *feet-clock*. This model (generating and imparting changes in the trajectories) is an interpretation and adaptation by a model suggested by the skwal inventor Patrick Thias Balmain (Balmain, 2007).

In the feet-clock model both plantar arcs can be represented by a clock (oblong), and the hours in the clock would define the *feet pressure points*. The feet-clock model is shown in Figure 3 here below. The basic configuration of both feet (put on the same longitudinal axis) is on the left side of Figure 3 together with the feet-clock hours in red. On the right side of Figure 3 the left foot is shown together with the possible body weight shifts as a function of the feet-clock hours. This dynamic is described by the green arrows representing the direction of movements (weight shifts) throughout all the *feet pressure points.*

Basically, the green arrows define how the weight distribution over the feet pressure points is dynamic and it (the weight spread) follows the direction of the arrows around the hours of the feet-clock (on both feet simultaneously!). For instance, at 11 and 1 hours the weight is spread on the frontal part (and laterally) *of the centre of the plantar arcs* of the feet, meanwhile the weight will shift backward on the back (and laterally) *of the centre of the plantar arcs* at 7 and 5 hours.

Figure 3 – The *feet-clock* model



Again, in Figure 3, the body weight at (3) hours will be completely spread over the right side of the plantar arcs of the feet, and over the left side of the plantar arcs at (9) hours respectively. The body weight will be perfectly spread in the centre of the plantar arcs of each foot at the x point , called x hours.

Even the barycentre vertical shifts on the skwaler vertical axis is mapped onto the feet-clock: for expert skwalers the barycentre shifts down (compression) while the body weight is shifted towards 11 or 1 hours starting from x hours (centre of the plantar arc of the foot). The same for the movements from 7 or 5 hours towards x hours. On the opposite the skwaler barycentre shifts up (extension on the skwaler vertical axis) for movements from 1 to 5 hours and from 11 hours towards 7 hours.

The use of and dynamics of the feet-clock model is clarified in section **Tecnica-Skwal© Turns**.

Compression and extension

Compression and extension movements on the body vertical axis are co-ordinated with the body weight shifts necessary to engage, manage and then exit the desired trajectory. Compression defines the progressive lowering down of the *in-line unit* (legs, knees and ankles) underneath the *bust unit* that, in turn, will bend forward but will *withdraw* overall. Compression helps the management of the equilibrium as it lowers down the barycentre in general and push back the skwaler weight. Compression is very useful entering, conducting and completing turns. Critical to manage very high speeds or anticipating jumps.

The extension, opposite to compression, moves up the barycentre and tends to shift forward the body weight. In particular, the *bust unit* shifts upward and forward over the *in-line unit*. Extension can facilitate the turn engagement, edge transitions but also the overall turn management. The use of the extension at the edge transition and engaging the turn (and subsequent compression during the turn) is still the most common technique practiced by the skwalers today (and not them only!).

Considering other techniques such as the *pull-push*, *cross under* and *cross over*, it is here recommended to apply the opposite: compression during the edge transition phases as well as during the initial engagement of the turn, that is, during movements towards 11 o 1 hours, or towards x hours on the feet clock coming from 7 or 5 hours (during the final part of the turn). Extension would rather be better applied on the movements (body shifts) from 1 towards 5 hours and from 11 towards 7 hours. Thus extension during the full conduction of the turn. Compression in edge transition or while entering or exiting the turn is more difficult to apply but it allows to apply extension during the mid-part of the turn. This technique allows more efficient and effective turn control. Specifically, it allows smoother and more homogeneous "calibration and "dose" of the body weight spread forward, backward and laterally while managing the trajectory within the turn. Also it allows to better control the degrees of inclination *snow-side* and barycentre movements to optimize the equilibrium. See Clip 1 below.

Clip 1: Compression and extension by Tecnica-Skwal© (select minutes 1.10-1.24 / 1.34-1.46 / 2.59-3.22)
http://www.youtube.com/watch?v=I42qzv5v5PQ

Tilting©

During the compression phase the *bust unit* will bend forward but *withdraw* overall. The excessive shift forward (while bending) will make the *bust unit* separate ("break") from the *in-line unit.* This would limit the body movements and jeopardise the management of turns. Also the excessive and general *bust unit* withdraw would shift backwards the barycentre too much, generating imbalance and loss of equilibrium. To compensate for these two dysfunctions during

the compression phase (it happens quite frequently!) push backwards your elbows and forearms progressively. Pull them back slightly at the elbow level. This action is here called *tilting*© and serves the purpose to minimize the excessive bending forward of the *bust unit* as well as its general withdraw as shown in Clip 2. Tilting in the compression phase, or *tilted compression*, is opposite to the direction of bending and shifting forward of the *in-line unit* as well.

Clip 2: Tilting Tecnica-Skwal© (select minutes 1.34-1.37 / 1.39-1.42)
http://www.youtube.com/watch?v=I42qzv5v5PQ

Tecnica-Skwal© Turns

Three processes define a skwal turn: the *engagement* is the configuration and interaction of the body-skwal-snow elements to enter the turn, the *lead* defines a specific configuration and interaction of the body-skwal-snow elements during the actual turn. The *disengagement* is configuration and interaction of the body-skwal-snow completing and exiting the turn.

Engagement

Moving on the slope, start a change of posture and trajectory in order to generate a turn. From this position *engage* the turn by executing a *tilted compression (see "Tilting©" section).* The snow-side inclination should be sufficient to carve the snow. The *feet pressure points* in the engagement phase start approximately at x hours and shift towards 1 hours approximately for the right turns. The *feet pressure points* start approximately at x hours and shift towards 11 hours approximately for the left turns. See Clip 3.

Clip 3 – Engagement Tecnica-Skwal© (select minutes 1.22-1.24)
http://www.youtube.com/watch?v=I42qzv5v5PQ

Lead

At the end of the *engagement* phase, the skwal starts carving the snow and the lateral part of the body starts to incline towards the snow and extend progressively. The management of the skwal on the edge together with the body extension will give the *lead* process of a skwal turn. In the *lead* phase the *feet pressure points* start approximately at 1 hours and shift towards 5 hours for right turns. The *feet pressure points* start approximately at 11 hours and shift towards 7 hours for left turns. See Clip 4.

Clip 4 - Lead Tecnica-Skwal© (select minutes 6.01-6.28)
http://www.youtube.com/watch?v=MgEgGScjnAg

Disengagement

As the skwaler is about to end the *lead* process (i.e. middle of the turn) the carving action is reduced. The snow-side of the skwaler moves away from the snow, and the skwal base starts returning flat automatically to end the turn, a *disengagement*. The *disengagement* is generated as the body extension in the previous *lead* process is going to complete. The skwaler performs a *tilted compression* (see Tilting© section) towards the trajectory opposite to the almost completed turn. In practice there is a compression of the *in-line unit* to be crossed under the *bust unit* in the opposite direction of the almost completed turn. The body weight shifts forward

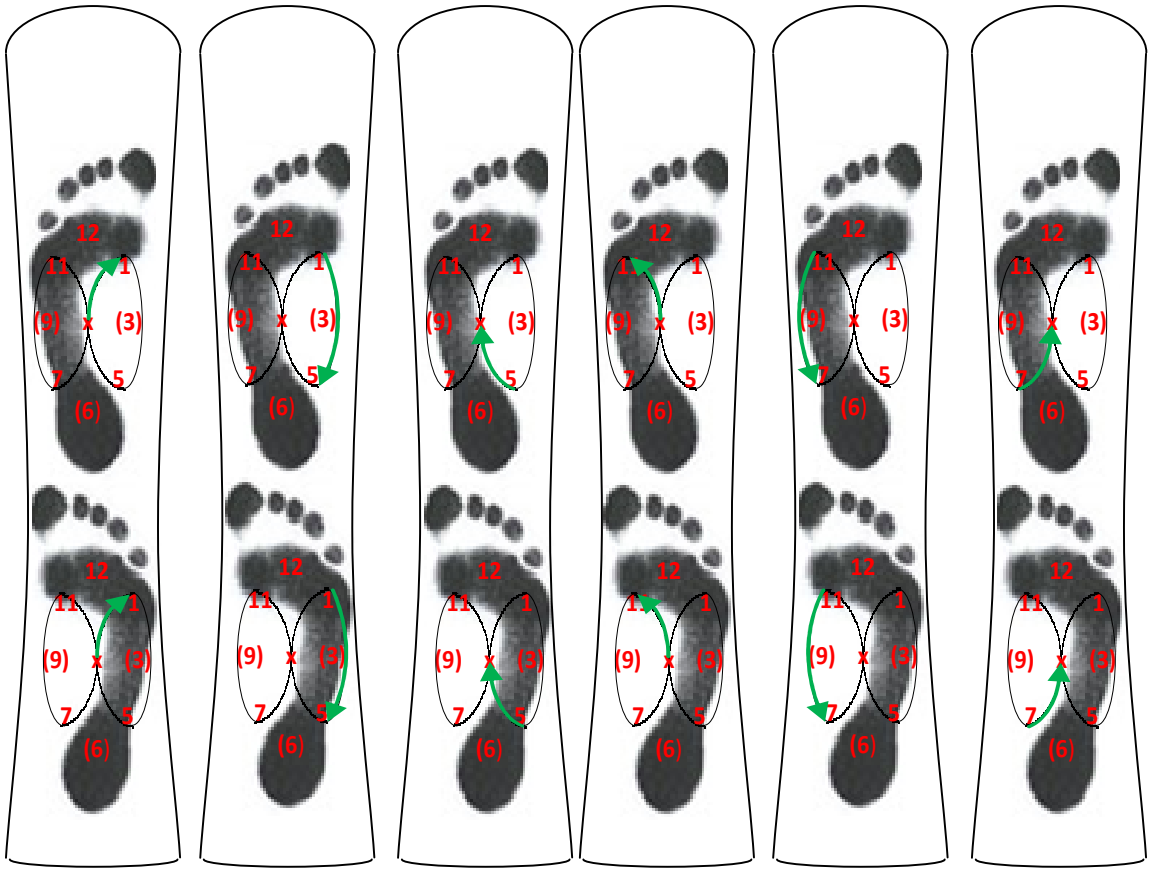
from a backward position. The compression is performed during the edge transitions with the *feet pressure points* moving from 5 hours towards x hours for right side disengagements and from 7 hours towards x hours for left side disengagements. See Clip 5.

Clip 5: Disengagement Tecnica-Skwal© (select minutes 9.31-9.49)
http://www.youtube.com/watch?v=MgEgGScjnAg

The Feet-clock model and its dynamics are depicted in Table 1 here below. Two turns are generated following a sequence of *engagement-lead-disengagement* processes (starting from the left side of Table 1). The shifts of the body weight and barycentre are highlighted by the green arrows which show where the weight is positioned and managed during the three basic processes of a skwal turn. The first three columns from the left side represent a right turn and the last three columns a left turn.

Table 1 – Skwal turn dynamics Tecnica-Skwal©

Engagement **Right**	***Lead*** **right**	***Disengagement*** **right**	***Engagement*** **left**	***Lead*** **left**	***Disengagement*** **left**
Snow-side right	**Snow-side right**	**Snow-side right**	**Snow-side left**	**Snow-side left**	**Snow-side left**



Toe-Heel action

The skwal turn radius can be augmented or reduced during the turn itself. The original trajectory can be modified, especially where a change is necessary and we are already "within" the turn.

Toe-Heel-UP

The radius of the turn can be "closed" or shortened by pressing up both the toe of the front foot and the heel of the back foot at the same time, *Toe-Heel-UP.* The increased flex of the skwal shortens the turn radius. You "close" the turn. See Figure 4.

Figure 4 - Toe-Heel-UP

Toe-Heel-DOWN

It is the opposite of the Toe-Heel-UP process. The radius is augmented by pushing down at the same time both the toe of the front foot and the heel of the back foot, *Toe-Heel-DOWN.* Flex of the skwal is reduced (camber augments) and the radius of the turn is augmented. You "open" the turn. See Figure 5.

Figure 5 – Toe-Heel-DOWN

The Support Unit

Arms have different functions. They act as balancing poles to optimise the equilibrium. They act as "snow sensors" (by palms or forearms) determining distance between the body and the

snow. Arms serve as full supports to glide during a radical carving session. In fact, the extreme side of a skwal action is a "full-body" activity, described as *skwarving* (see Skwarving© section below), and the arms are as active as the legs. Arms positioning is dynamic and is a function of the distance between the body and the snow. Some positioning of the entire *Support Unit* are described below.

Figure 6 shows forearms parallel to the snow and palms facing the slope, "looking for " the snow. This is the "basic support unit" position.

Figure 6 – "basic *support unit*" position

The "for-snow" position of the *support unit* aims at a snow contact with the arm and palm gliding in the snow-side and accompanying the turn. See Figure 7.

Figure 7 – "for-snow" position

As the forearm in the snow-side is gliding on the snow accompanying the turn the "snow-forearm" position is obtained. See Figure 8

Figure 8 – "snow-forearm" position (radical)

The "snow-arm" position is shown in Figure 9. This *support unit* position indicates that the entire arm in the snow-side is laid down in the snow and it accompanies the turn. The arm is fully extended and slightly bent forward. As a consequence the full body in the snow-side is laid down on the snow accompanying the turn. See also Clip 6.

Figure 9 – "snow-arm" position (full radical)

Many other *support unit* positions exist, but all of them will "balance body projections, accompany the turn and gauge the snow".

Support unit symmetry

A full *support unit* symmetry will guarantee a perfect alignment both with the skwal and the turn itself. This symmetry helps minimising unnecessary movements which are simply continuous body or equilibrium adjustments. See Figure 10.

Figure 10 – *Support unit* symmetry

The *support unit* follows the turn

Certain positioning and projections of the arms are possible in order to accompany and follow the trajectory and the turn without any disruption. In any case, the *support unit* symmetry (see Figure 10) during the three processes of a turn (engagement, lead, disengagement) must be kept. Put simply: a right turn can show the left arm going towards the right snow-side. But crossing the opposite median part of the body with the arm is to be avoided in order to maintain optimal control and stability while managing the trajectory. See Figure 10a below.

Figure 10a –Median section of the body

Skwarving© (Radical Skwal Carving©)

The radical approach to skwal carving or Skwarving© is the management of one or more carving turns with the full body (in the snow-side) laid down in the snow during the lead phase (from 1 to 5 hours and from 11 to 7 hours in the feet-clock model). The lateral part of the body in the full snow-side is completely laid down in the snow. All lateral parts of the *bust*, *support* and *in-line units* are fully gliding in the snow during the lead process, accompanying the turn evolution.

Single-Skwarve

Perform a full *tilted compression* in the engagement process and in the middle of the lead phase, at (3) or (9) hours of the feet-clock, the skwal base should be fully tilted up perpendicularly to the slope. The full lateral body side (or most of it) is progressively extended over the snow. Complete with a full disengagement. See Clip 6.

Clip 6: Single-Skwarve (select minutes 1.33-1.39)
http://www.youtube.com/watch?v=I42qzv5v5PQ

Muliple-Skwarve

Perform a series (two or more) Single-Skwarves with no interruptions. Multiple-Skwarve is radical skwal carving at its maximum level of difficulty. It is more complex and demanding of the Extreme Carving technique in snowboard or similar systems of carving techniques. See Clip 7.

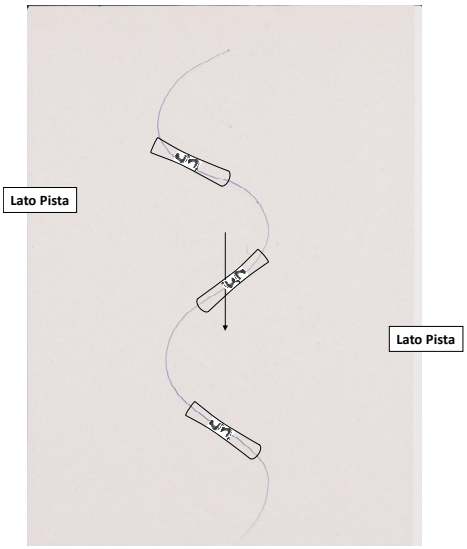
Clip 7: Multiple-Skwarve
http://www.youtube.com/watch?v=_z0Gc1yFoAY

Multiple-skwarves are performed by integrating a disengagement with the following engagement phase. *Tilted compression* in disengagement continues directly into the engagement as it would be asingle process: *you remain doubly compressed*.

Priming of the turn
Priming defines *where* the engagement phase starts *considering* the nose of the skwal (longitudinal axis) with reference to the side of the slope. Three primings are possible:

<u>*Nose down priming:*</u> this priming is simple, and it happens with the nose of the skwal facing below the side of the slope (most common condition). See Figure 11 below.

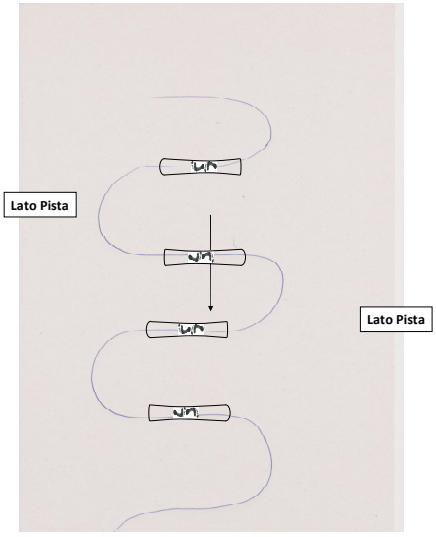
Figure 11 - *Nose down priming*



If this priming continues in the lead process a *nose down single- or multiple-skwarve* is performed…a very frequent condition.

<u>*Nose side priming:*</u> this priming is moderately difficult and it is performed with the nose of the skwal facing directly to the side of the slope. See Figure 12.

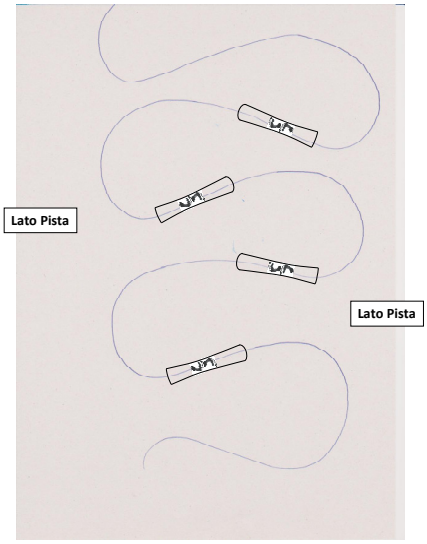
Figure 12 - *Nose side priming*



If this priming is continued in the lead process a *nose side single- or multiple-skwarve* is performed… quite a difficult evolution.

Nose up priming: this priming is very difficult and it is performed with the nose of the skwal facing directly over the side of the slope. See Figure 13.

Figure 13 - Nose up priming



If this priming is continued in the lead process a *nose up single- or multiple-skwarve* is performed…a pure dream.

Tracking

Tracking means to perform the lead process of the turn by contrasting the selected trajectory and forcing the nose of the skwal sideways. The effect is of prolonging and enlarging the turn laterally and transversely. See Clip 8.

Clip 8: Tracking (select minutes 2.02-2.06)
http://www.youtube.com/watch?v=I42qzv5v5PQ

Thias Turn

A full 360 turn. It expresses the great skwal carving potential. See Clip 9 and 9a.

Clip 9: Thias Turn
http://www.youtube.com/watch?v=LDGSuw7bYFU

Clip 9a: Thias Turn (skwaler point of view) (select minutes 0.30-0.40/0.54-1.07)
http://www.youtube.com/watch?v=BDgAFZ89c5Q

Other techniques

Cross over-under-through - http://www.bomberonline.com//articles/cross_over.cfm
Cross over - http://www.j2ski.com/ski_technique/Carving/2_Turn_Initiation.html
Push Pull Turn - http://www.extremecarving.com/tech/tech.html

Skwal RACE – (work in Progress)

Evolution – (Top secret ☺)

References

Patrick Thias Balmain (2007) - *The Inner Glide: the Tao of Skiing, Snowboarding, and Skwalling* – Destiny Books (http://books.google.it/books?id=xkx9cmFoZZcC&printsec=frontcover#v=onepage&q&f=false)