



Level 3

7

**ADVANCED
TECHNICAL**



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ADVANCED TECHNICAL

FUNCTIONAL SKIING

Success in skiing is determined by achieving desired objectives. A primary objective is to adapt to all terrain and snow conditions. A skier must also be able to choose and maintain a desired trajectory or turn shape. There is also the choice to control, maintain or generate speed. Finally, the balance and movements should be as efficient as possible to maximize results while conserving energy. Meeting these objectives determines the technical response, and the form or appearance is a result.

Learning to make appropriate technical choices takes mileage and experimentation. Consistency is the result of trial and error. There are often multiple options to get the job done so skiers can choose different responses in similar situations to meet with success. Different skiers can find different solutions to the same situation.

With the variables of advanced and expert skiing it is helpful to focus on the qualities demonstrated by expert skiers. Understanding these characteristics helps prioritize skiing and teaching decisions.

All terrain, any conditions...



free to choose line and speed...

with economy of effort.



Advanced Competency

Maintaining strength and flow

Most skis are designed for forces to act through the middle. The skier's alignment should maximize biomechanical strength (see page 7.6). Moving to maintain this biomechanical advantage through an arc creates a smooth flow in the turn.

Advanced Competency

Arc to arc

Linked turns are more efficient and dynamic. Carrying momentum from turn to turn creates the “free fall feeling” of skiing.

Moving from arc to arc starts cognitively. Looking ahead and anticipating the best line helps to choose the best way to get there.

The amount of rising between turns can be controlled with flexion or increased through extension. These decisions vary with terrain, conditions and speed.



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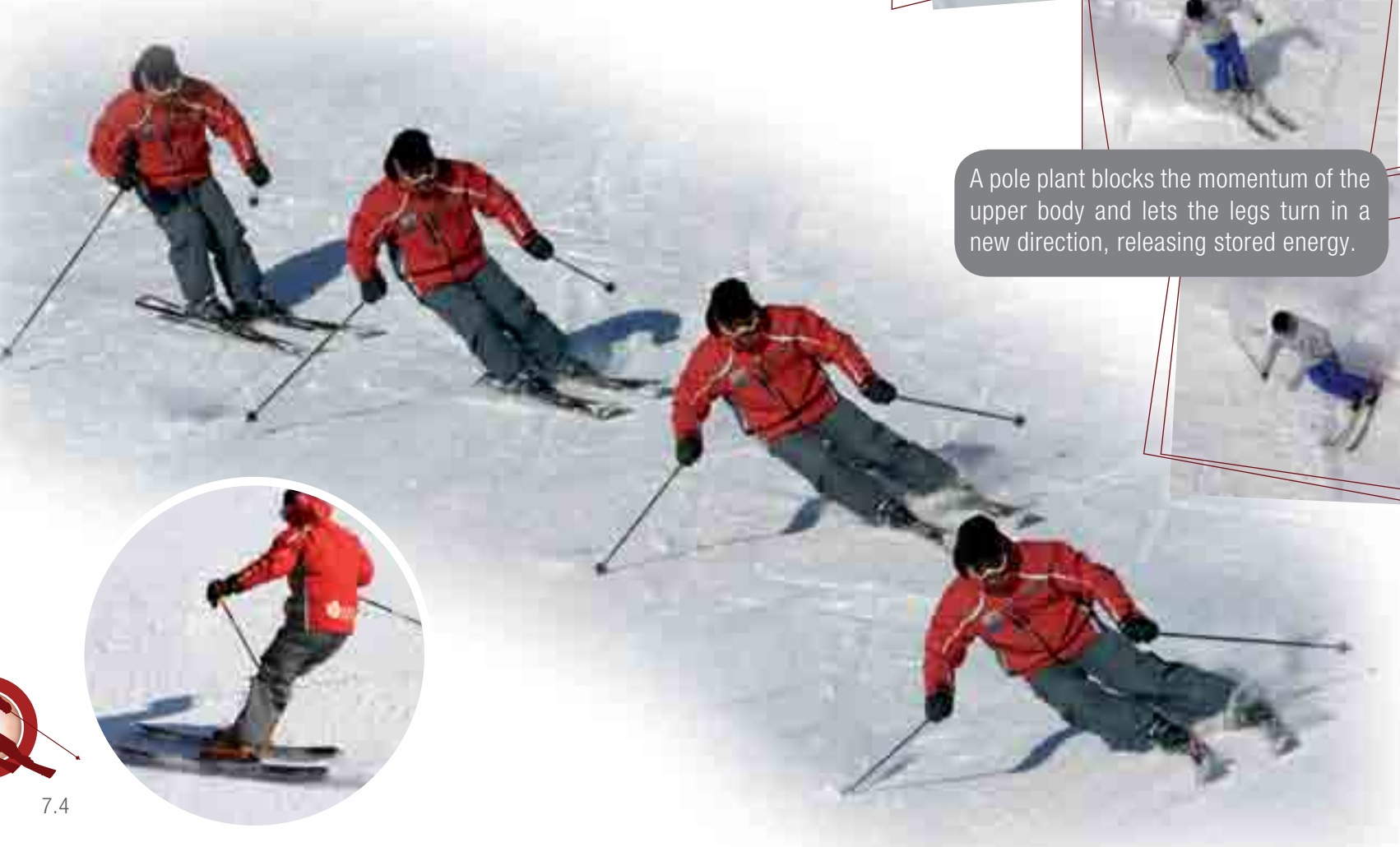
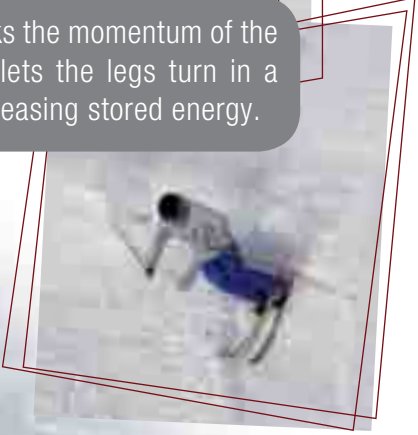
Advanced Competency - Loading and deflection

Creating rhythm by using rebound and deflection is part of the thrill of skiing. As skis grip and bend, the forces increase. The skis and boots can act as springs, combining with the skier's own work effort. Resisting these forces stores potential energy ("loading"). This energy can be used to change trajectory and to increase deflection across the slope. Directing this reaction can generate speed.

The lower body steers while the upper body stays stable. This stores energy.



A pole plant blocks the momentum of the upper body and lets the legs turn in a new direction, releasing stored energy.



Advanced Competency - Steering versatility

Skis are designed primarily to turn on an arc on parallel edges. Other design considerations are stability and grip, but the starting point is a round turn shape. A ski can skid, steer or carve, and good skiers develop many steering options that mix all three.



Turning the skis more across the line of travel creates friction to control speed. Turning the skis more is also used to change line or turn shape. This steering angle can be used in different parts of the turn.

A round track of even width takes advantage of ski design and conserves energy. This is an efficient way to control speed.

Carving takes advantage of ski design. Bending skis into a reverse camber creates smooth and clean arcs, and stores energy in the skis. The reduced friction of a carving ski saves energy and can translate into increased speed or less effort.



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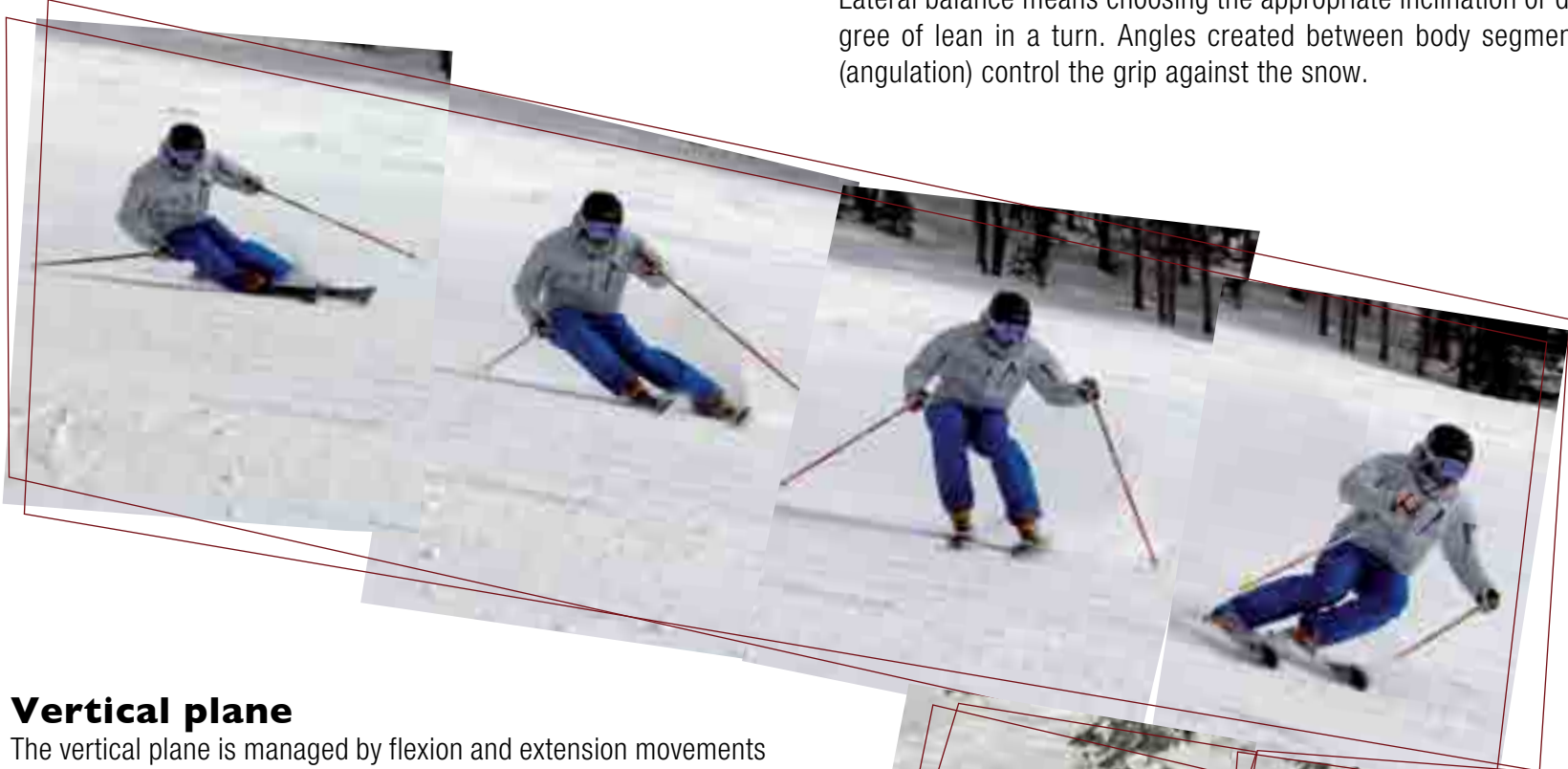
PLANES OF BALANCE

The path of the COM is a curved trajectory, supported and deflected by the BOS. This relationship can be described as three planes and one axis as a way of understanding balance.

Lateral plane

The lateral plane adjusts width of stance and body movements to balance side-to-side. Adjustments in width of stance affect stability and ability to incline into a turn.

Lateral balance means choosing the appropriate inclination or degree of lean in a turn. Angles created between body segments (angulation) control the grip against the snow.



Vertical plane

The vertical plane is managed by flexion and extension movements on the line of balance between the COM and BOS, regardless of the degree of lean. These movements control snow contact and steering load and vary with the situation and desired objective.



Fore-aft plane

The fore-aft plane maintains alignment of the BOS and COM relative to the middle of the ski. These adjustments compensate for speed, resistance and terrain changes. Good fore-aft balance requires a mobile stance and anticipation of terrain and snow.



Rotational axis

The rotational axis describes the use of rotary movements and is seen in the relationship of the upper and lower body. Good balance on the rotational axis requires a relaxed stance and uses the lower body to lead the turning effort. The hips and upper body stay stable and work independently of the turning effort of the legs.

