

## Appendix 2: – Speed Session:

Tick below to indicate which type of speed session is being coached:					
A Straight ahead speed	<input type="checkbox"/>	B First step speed	<input type="checkbox"/>	C Multi-directional speed	<input type="checkbox"/>

Component	Assessment Criteria	✓	×	FQ
Straight ahead Speed- Acceleration	<i>Participant:</i>			
	<i>Posture-</i> body position (line of power). Straight line head to toes, with neutral spine			
	Drive up out of start position			
	Stay in a lean by producing force down and back “drive knee forward” then “punch back” staying on balls of feet			
	<i>Arm action-</i> long arm action on back side , slightly more collapsed on front side			
	Palms slightly open			
	<i>Leg action-</i> “running step” bring up heel under centre of mass with a low heel recovery			
	Knee doesn’t travel up too high- 45 degrees to horizon			
	Toe pointing up			
	Positive shin angle			
Straight ahead Speed- Top speed	Pelvis position in posterior tilt or neutral so pelvis is underneath ribs			
	Brace core			
	Head looking straight ahead			
	Stay tall			
	Shorten arm action towards 90 degrees at elbow			
	Knee up to waist			
	Toe up			
Balls of feet- the heel may land on the ground but it is not weighted. Weight on ball of feet				
First step Speed	First step speed is “reactive acceleration in any direction”			
	Parallel stance “athletic stance”			
	Point of push off is the ball of the feet- centre of mass over base of support (the ball of the foot)			

	<i>Forward first step-</i> Fight or flight mechanics- allow natural reaction to step back before stepping forward known as "dig step" or "plyo step." This is followed by running step			
	Vigorous arm drive for first few steps			
	<i>Lateral first step-</i> The lead leg will do a "directional step" or "gravity step" (reactive). Lead leg may also do "pivot step" (planned). Directional step involves a subtle lift and turn so it can now push down and back so the back side leg can perform the running step. Back side leg may use dig step or may stay planted.			
	Directional step stays close to ground			
	Lead with the shoulder			
	<i>Backward first step-</i> turn and run known as "hip turn" or "drop step" followed by running step			
	A pivot is too slow- this is where the leg stays still while you pivot around it (i.e. If moving backwards over right shoulder you would keep right foot planted so your left leg moves forward to get you on half turn. In this situation your left foot would go quite "far" in front of your original base of support.			
	Hip turn using a dig step (i.e. if moving backward over right shoulder you would create an opposite force with the left leg by pushing forward "slightly" in front of your base of support then turning hip with the right leg)			
Multi-directional Speed	<i>Lateral shuffle-</i> stance- feet wider than shoulder. By having feet wider than centre of mass I can push my mass in the direction I want to go			
	Feet straight ahead- to lock my ankle joint into dorsiflexion to keep joint stiff and loaded			
	Knee inside foot so I can push down and away			
	Stay in the tunnel- stay level and low as you push off in direction where you are going			
	Turn lead foot slightly out- Drive with heel using hamstrings and glutes rather than groin			
	Push pull lateral gait cycle- push with outside leg and pull with lead leg			
	<i>Lateral cut-</i> angle of force production towards base of support so lead leg is outside base of support			
	Stay in the tunnel Shoulders level			
	The more speed you come in with the wider your base as you cut			
	<i>Lateral cross-over-</i> directional step with lead leg			
	Keep the upper body orientated to the play- stays straight			
	Cross the backside foot over			
	Turn and run with the lower body			

Notes:

For the purposes of simplicity APA define any form of reactive acceleration using a running step as 'first step speed.' Any other forms of travel are referred to as Multi-directional speed. The majority of tennis movements would fall in the later.

*Lateral shuffle*- is used in some sports such as basketball and football to track or jockey opponents at high speed. It is also used as a form of 'transitional' submaximal speed to assist in getting back to a specific position such as in Tennis.

When shuffling at high speed in order to optimise force production you are encouraged to turn the foot of the lead leg slightly out in the direction of travel- known as a directional step.



A directional step is not to be confused with a step known in basketball as a "jab step" or "open step." A jab step is used from a much more upright stance and is used in basketball to feint that you are moving in one direction in order to unbalance your opponent. You also observe it in Tennis when athletes are rallying down the middle where they have a more upright stance and choose to "step out" towards a ball that is very close to them.



When the athlete is shuffling slowly to simply maintain positioning but not maximising quickness the lead foot may or not be rotated. Such an alteration is not necessary.

### *Lateral cross-over*

I have previously used the term 'pivot' or 'closed step' synonymously when referring to lateral movement. Whether you are talking about a 'cross-over' step or a 'running step' you're referring to the same action of the back side leg coming through. A pivot step implies keeping the lead leg still while you pivot across it with the back side leg. In reality there will always be a subtle 'directional step' of the lead leg first. Unlike the jab step where you pick your foot up and put it down quite deliberately- the directional step is a subtle shifting of the mass towards the direction of travel. This may or may not involve picking your foot up.

Therefore, it is to be discouraged to teach athletes to actively 'open their hip' in the direction of travel. Rather, the job of the coach is to set up the posture by getting the athlete in a wide athletic stance. The body will naturally turn the shoulders and hips/foot of the lead leg in the direction of travel. Yes the lead leg may lift off the floor but only a matter of an inch, and perhaps not at all if the base is wide enough. So focus on the start position and the explosiveness of the cross-over of the back leg coming through.



### *Role of the split step in Tennis*

Tennis players will often use a split step to prepare for movement in any direction. The action of jumping in the air creates elastic energy that can be used to propel the body into motion on landing.

Recreational players may initially jump and land with their feet simultaneously adopting the athletic stance position shown above in the far right, before then using the directional step to move in the appropriate direction. More advanced players will actually land with their feet in a staggered fashion so that the back side leg lands slightly before the lead leg. This means they will have made the directional step in the air saving time!

### *Lateral cross-over versus Lateral running step*

As mentioned above, lateral movement focuses on the explosive leg drive of the back side leg coming through using a pivoting action of the lead leg. However, there are some subtle differences between a cross-over step and a running step.

During a Lateral cross-over the back side leg acts as a piston from a fixed position. In the example above there is a directional step of the lead leg followed by the cross-over step.

The cross-over step is used when you want to keep your visual focus towards the play while still moving laterally. So your shoulders and hips will not be fully turned.

With a Running step, using tennis as an example, visual focus will be down the baseline whereas with a cross-over step the eyes will be on the net. The running step is used when you need to cover a large distance quickly. The reactive nature of a first step means you may notice an opposite force away from the direction of travel similar to the dig step used in forward movement. Or if the stance is very wide you may even notice a gravity step where the athlete pulls their lead leg underneath their base of support.

In the example below, there is a directional step from the lead leg and a strong push off from the back side leg which is in a fixed position. Notice the quick re-direction of head, shoulders and hips towards the direction of travel. It is likely that because the athlete only has one choice to make he was able to keep his back side leg in a fixed position. When you have more than one choice you will more often see the opposite force away from direction of travel.



Screenshots: Courtesy of Complete Speed Training- Lee Taft.

<http://completespeedtraining.com/>