

CHOOSING THE SUITABLE POLE – ERRORS AND MISCONCEPTIONS

Part 3 – changing the length of poles

Part 2 was about: Two poles that are of a difference in length of 30cm (e.g. 4.30m and 4.60m) have about the same stiffness, if there is a difference at the weight-index of about 7-8kg (15lbs). That means 430/77 (170lbs) is about the same as 460/70 (155lbs), or 400/70 (155lbs) is like 430/63 (140lbs). If the difference in length is 15cm then the difference in weight is about 7.5 pounds, meaning 415/68 (150lbs) is like 415/73 (160lbs), a 415/73 is like 430/68 (150lbs).

But how is it in detail looking at poles of different length, when should I change the length of a pole, when not and how do I plan the switch?

To answer these questions experience, observation and diligence is needed, because weight-index and flex-number won't give much assistance.

More than 120 poles I have measured in my parent's garage, to add many years of practice, watching different poles in the hands of various athletes.

Logical would be to switch from 430/73 (160lbs) to 460/73 (160lbs). Same weight-index, but longer. But that wouldn't be wise, because as said earlier, a 30cm longer at the same gripheight is about 15pounds harder. About the same stiffness as 430/73 (160lbs) would be 460/66 (145 lbs).

It was simplified after the introduction of 15cm increments. The logical conclusion to switch from 430/73 to 445/73 is still quite a big step, but only half that big and not so unsuitable.

A series of poles like 415/75, 430/75, 445/75 and 460/75 gives a minimalist set for example for a decathlete. This decathlete should weight about 73kg (160lbs). If it is a pole vaulter the set would be more suitable if he is 70kg (155lbs) as pole vaulters should have more technical expertise on the matter. Recommendable would be a set of twice as many poles (see below at the end of this article).

An additional difficulty comes with the design of the poles: The flexural behaviour of poles of different length isn't the same.

Simplified, gripping a pole 10cm from the top end, the flexural behaviour of different poles is similar. (That said, I am always talking of poles from the same line of products; the flexural behaviour of poles from different producers or product lines are dissimilar, irrespective that they are of the same length and are gripped at the same height).

Problem is, if you change the length of your poles by 30cm you cannot (and should not) raise your grip by 30cm. If someone gripping a 4.30m pole at 4.20m switches to a 4.60m pole he will not raise his grip to 4.50m - except he is of extraordinary foolishness.

If this athlete grips the 4.60m pole at 4.25m (raising his grip from 4.20m to 4.25m), what would be comprehensible, the flexural behaviour would differ drastically from the 4.30m pole he jumped before. The flexural behaviour is worse, if the poles is gripped 35cm from the top end.



Why this is the case, that the flexural behaviour is so different, whether you grip the pole 10cm or 40cm from the top end, will be subject of another article.

In few words: The change in length between poles should, whenever possible, be only 15cm. In so doing the difficulty of different flexural behaviours can be reduced. E.g. 4.00m -> 4.15m -> 4.30m -> 4.45m and so on. Going from 4.30m directly to 4.60m, for example leads to a longer phase of customization, going from 4.60m to 4.90 poles even longer. The phase of customization is usually as long as the athlete needs time to grow physically to grip poles higher by 15-20cm, meaning the athlete needs to catch up to the longer pole by a raised grip. For example: The athlete is gripping a 4.30m pole at 4.20m. He switches to 4.60m poles. He will find a good feeling again on 4.60m poles, when he got physically strong enough to jump a gripheight of at least 4.35m. At the beginning, gripping the 4.60m poles at 4.20 or 4.25m he will feel a big difference in how the longer 4.60m pole bends and moves. The 4.60m poles will not feel the same and it will be difficult to jump the same technique as doing so on 4.30m poles; that is not due to a lack of technical abilities, it's because the flexural behaviour of the poles is not the same gripping a pole 30-40cm from the top end.

The athlete should go first to 4.45m poles and then, as he got to a gripheight of 4.30m and higher, he can think about going to 4.60m poles. There's no need to jump a 4.60m pole while gripping 4.30m and lower, but there is a disadvantage coming from a suboptimal flexural behaviour of the pole that will hinder his path to better results.

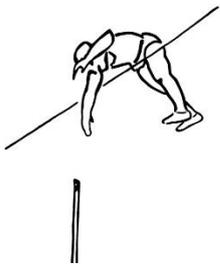
People went from 4.00m poles to 4.30m, to 4.60m poles because a decade ago 4.15m and 4.45m and 4.75m poles were not well known and two decades ago they were not available yet. Therefore many clubs do not have these poles (4.15 / 4.45 / 4.75) in stock and their responsible do not have these in-between-poles in mind, when ordering new or replace older poles.

Now, how do we plan the switch between poles of different length? There are three ways.

The most comfortable but most expensive approach is to order so many poles of every length, that they overlap in stiffness. For example you have some 4.30m poles, then you order the softest 4.45m pole a bit softer than your stiffest 4.30m, and at 4.60m again you order your softest 4.60m pole a bit softer than your stiffest 4.45m pole. Doing so you will have to order 1-2 poles more for every switch in length. That's a lot of money but it's comfortable for your athletes.

Second approach is to calculate that the next longer pole is as stiff as the last one. For example you order the softest 4.45m pole as stiff as your stiffest 4.30m pole is. You can do that, if you have enough information or a very good dealer. You need to know for example which 4.45m is exactly as hard as my 4.30m Flex 18.0. I can do that because I measured more than 120 poles, but I can do that only for UCS/Spirit poles. For Pacer or Nordic I do not have enough data and rely on the information I get from Nordic or Pacer. This second approach is the most suitable for almost anyone because you do not lose much money (as in the first approach) and you do not risk, that the longer pole will be too hard. Even if the longer pole is a bit stiffer, that's actually exactly what you want.

Third approach is best for shorter training poles and for absolut experts. You try to find out how hard the longer pole has to be so that he is just a bit harder than the shorter pole. For example you have 4.30m Flex 18.0 pole and you look for a 4.45m pole that is about 0.5 Flex harder (measured as 4.30m pole). Especially for shorter training poles



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this is an approach that saves money. You can easily switch from a 3.60m pole to a bit stiffer 3.75m pole and so on. You don't need overlapping on this section of your set of poles. If you have a very good dealer or have enough data on your own, you can do the same with every section of your set of poles. For example I calculated for my female athlete switches from 4.30m poles to 4.45m poles and for my male athletes switches from 4.60m to 4.75m to 4.90m poles. The 15cm longer poles are 0.2 to 0.5 harder than the shorter ones. Like that you get a perfect setup and you save money. You need an experienced coach.

Finally after all these detailed information a simple recommendation. Without aspiration for perfection, the following set will give the average pole vault club a good basis. These poles should be bought with a flex that is in the middle of each weight-index (your dealer should know what that means, if not, switch your dealer immediately or let him ask the producer).

400/68 -> 400/70 -> 400/73 -> 415/70 -> 415/73 -> 430/70 -> 430/73 -> 430/75 -> 445/73 -> 445/75 -> 445/77 -> 460/75. The algorithm is to go down by 5lbs (2-3kg) every time you switch length.