

## String Physics for Dulcimers

There are 3 different characteristics of strings that affect the pitches or notes of a string:



- 1) Diameter  
Thick = lower                      Thin = higher
  
- 2) Tension / Tightness  
Looser = lower                      Tighter = higher
  
- 3) Length  
Longer = lower                      Shorter = higher

1) Diameter is determined by the gauge of strings with which your dulcimer is strung.

a. Mountain dulcimer:

The strings get progressively thinner as you move from bass to melody strings.

Example: Different builders choose different gauges, but many use something like this

Bass	= D =	.022 or .024w (w= wound)
Middle	= A =	.012 or .014
Melody	= A =	.010 or .012
if Melody	= d =	.010

b. Hammered dulcimer:

The best balance across the whole instrument comes when the lower strings are strung with thicker strings and the higher strings are

strung with thinner strings. There is a wide variety of choices between builders, so consult your builder's specifications to see what the gauges are on your dulcimer.

2) Tension is determined by tuning the strings. As we turn the machine head or tuning gear or tuning pin one direction we are tightening the string and raising its pitch; when we turn it in the other direction we are loosening the string and lowering its pitch.

Once the first two are chosen for our dulcimer, our playing makes use of the third characteristic:

3) Length. The vibrating string length (VSL) of a string is determined by the measurement from the bridge to the nut. The string will never get longer than this length. On the mountain dulcimer what we do with our fretting hand is to shorten or lengthen the string by pushing the string down behind the frets to change its pitch. On the hammered dulcimer we choose the length by choosing which course to play, because each has a different length of string.