



Und die selben saytten alle sampe v̄ lautē / Die sollen von den saitten seyn / die man auß dē dermē od̄ auß dē ingewasde / v̄ schaffe machet / wie wol sie Boetius v̄n and̄ musici nervos haissen / gleich als ob sie auß den adern v̄ thiere werē gemacht / das mag villicht vor zettē also gewesen seyn / das mā sie auß dē adern gemacht hat / aber iezūdt / macht mā die selbē saittē v̄ lautē / auch v̄ grossen v̄n clainē geigē / auch v̄ harpfē / v̄n des harpfeutes / auch des drum scheits / alle allam auß den schauē dermē / die andern instrumēt aber / v̄ habē etliche messen / etlich stehelenē saiten / die selbē wellē sich / zū v̄ lautē mit lassen brauchē / Dan̄ so mā die in dē bundē mit blossē fingern angreiffet / So wellē sie nit so wol lauten / als so man sie mit eyssen / od̄ holz anschlecht / darum mußt du wissen / die vnder schaidt / v̄nd yetlichem instrumentt zū geben / das im zū gehort v̄nd kein anders /

*Testing the breaking strength of a string
S. Virdung, Basel 1511 (The oldest printed source on this subject)*

Overwound Strings

If all of the strings of a given instrument are of the same length, diameter and mass, then the only way to lower the pitch of a strings is to reduce its tension. This causes the string to be flabby and sound bad. To keep the tension but have the pitch low, the string must have more mass. Originally this mass was attained by giving the string a large diameter, which allows the string to have the right pitch at a tension equal to the others.

However, when string diameters are adjusted to equalize tensions, the string's playability and tonal volume and quality are also changed. Since the repertoire began expanding to include playing in high registers, playing low strings, and concert playing, it was necessary to eliminate the difficulty and attain the necessary weight in another way.

Beginning in the middle of the 17th century, the lower strings were wound with metal wire to increase their weight without increasing their diameter. Winding low gut strings enhances their ability to sound, serves to brighten their sound, and improves their resonance by allowing for increased tension with undiminished elasticity at smaller diameters. Without winding, these strings would be too thick and dull. Thinner strings, made possible by overwinding, are more playable, an additional important benefit to the musician.

The first report (or certainly one of the first) regarding overwinding is John Playford's following remarks in his book *A Brief Introduction to the Skill of Music* (London, 1658).

There is a new invention regarding the bass strings of viols, violins and lutes which allows the usual gut strings to sound better and louder, whether bowed or plucked. The device is a thin wire which is spun around gut or silk. I have tried both, but the ones wound of silk are more durable and give a good sound.