

The Comprehensive Guide to Five and Ten String Kanteles: Technical Analysis, Playing Techniques, and Cultural History

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The **kantele** is the national instrument of Finland, a plucked string instrument belonging to the Baltic psaltery family. While modern concert kanteles can feature upwards of 40 strings and complex lever systems, the core of the Finnish kantele tradition lies in the smaller instruments, specifically the **five-string** and **ten-string** variants. These instruments represent a unique intersection of ancient musical tradition, minimalist engineering, and profound acoustic simplicity. For the musician or luthier, understanding the nuances of these small kanteles requires a deep dive into historical construction methods, the physics of string tension, and the specific ergonomic demands of the traditional Finnish playing styles.

The Historical and Mythological Context of the Small Kantele

In the Finnish national epic, the **Kalevala**, the kantele is introduced as a mystical instrument created by the hero-shaman **Väinämöinen**. According to myth, the first kantele was crafted from the jawbone of a giant pike and the hair of a forest maiden. This mythological origin underscores the instrument's deep connection to the natural world and the spiritual life of the Baltic-Finnic peoples. For centuries, the five-string kantele was the primary tool for accompanying **runosong** (runolaulu), a form of oral poetry characterized by its trochaic tetrameter.

The small kantele was not merely a musical instrument but a functional object of social cohesion. In rural Finland, the instrument was often carved from a single piece of wood, usually **spruce**, **pine**, or **birch**. The transition from the five-string to the ten-string kantele mirrors the evolution of Finnish music from the pentatonic and modal structures of runosong to the more diatonic and harmonically complex structures of folk dance music in the 18th and 19th centuries.

Acoustic Engineering and Structural Anatomy

From a technical standpoint, the kantele is a **chordophone** without a neck, where the strings are stretched across a resonating body. Small kanteles are categorized into two primary construction types: **koverrettu** (carved) and **laatikko** (box) kanteles.

1. Carved (Koverrettu) Construction

Traditional five-string kanteles are almost exclusively carved. This involves taking a solid block of wood and hollowing out the interior from the top or the bottom. If hollowed from the top, a thin soundboard is glued over the cavity. If hollowed from the bottom, it remains open or is covered by a thin base plate. The carved kantele is prized for its **warm, dark, and organic timbre**. The thickness of the walls, typically varying between 5mm and 10mm, acts as a filter for high-frequency overtones, producing a fundamental-heavy sound that resonates within the instrument's internal chamber.

2. Box (Laatikko) Construction

The ten-string kantele is often built using box construction, particularly those developed in the late 19th century. This involves joining separate pieces of wood for the sides, ends, and soundboard. This method allows for a larger

internal volume and a thinner soundboard (often 2.5mm to 3.5mm thick), resulting in increased volume and a brighter, more sustained tone. This structural shift was necessary to accommodate the increased tension of ten strings and to allow the instrument to project in larger social settings.

Comparison Matrix: 5-String vs. 10-String Structural Dynamics

Feature	5-String Kantele	10-String Kantele
Typical Construction	Carved (Koverrettu)	Box (Laatikko) or Carved
Standard Tuning	D, E, F#, G, A (Diatonic)	D, E, F#, G, A, B, C#, D, E, F#
String Material	Steel or Brass (0.30mm - 0.40mm)	Steel (0.30mm - 0.45mm)
Average Length	60 cm - 70 cm	75 cm - 85 cm
Resonant Profile	Muted, harmonic-rich, fast decay	Bright, clear, sustained resonance
Common Bridge Type	Metal bar (Varras)	Individual bridge pins or wood saddle

The Physics of String Tension and Tuning

Designing and playing a kantele requires an understanding of **Mersenne's Laws**, which describe the relationship between the frequency of a string and its physical properties. The frequency (f) of a vibrating string is determined by the formula:

$$f = (1 / 2L) * \sqrt{T / \mu}$$

Where:
L = Speaking length of the string
T = Tension applied to the string
μ = Linear mass density (mass per unit length)

On a 5-string kantele, the strings are often of roughly equal length due to the parallel arrangement of the tuning pins and the **varras** (the metal bar or tailpiece). To achieve the diatonic scale (D-E-F#-G-A), the player or builder must vary the tension. This creates a unique tactile experience where the higher notes feel significantly tighter than the lower notes. In contrast, the 10-string kantele features a more pronounced "wing" shape, allowing the lower strings to be physically longer than the higher strings. This provides a more uniform tension across the instrument, enhancing playability for complex melodic passages.

Technical Playing Styles: Mastering the Small Kantele

Playing the kantele is fundamentally different from playing the guitar or harp. There are two primary techniques used in the Finnish tradition: **Plucking (Sormitustyyli)** and **Damping/Covering (Peittämistyyli)**.

1. The Plucking Style (Melodic Approach)

In this style, the kantele is placed on a table or the player's lap with the shortest string closest to the body. Each finger is assigned a specific string. For a 5-string kantele, the standard positioning is:

- Thumb: Plays the 1st string (highest pitch).
- Index Finger: Plays the 2nd string.
- Middle Finger: Plays the 3rd string.
- Ring Finger: Plays the 4th string.
- Little Finger: Plays the 5th string (lowest pitch).

This "one finger per string" approach allows for rapid, fluid melodic runs. Advanced players use a technique called **alternating plucking** to create a continuous wall of sound, utilizing the natural resonance of the instrument to create a "shimmering" effect.

2. The Damping or Covering Style (Haapavesi Style)

The damping style is a more rhythmic and harmonic approach, common in Western Finland. In this technique, the fingers of one hand (usually the left) are placed **between** the strings to dampen unwanted notes, while the other hand (usually the right) strums across all strings. By lifting specific fingers, the player allows certain strings to ring out, creating chords. This is functionally similar to the way an autoharp works, but it is executed entirely with manual finger placement.

Tuning Systems and Modal Variations

While modern guides often suggest tuning the 5-string kantele to a major pentachord (D4, E4, F#4, G4, A4), historical tunings were much more varied. Before the standardization of the 12-tone equal temperament, kanteles were tuned in **just intonation** or various modal scales, such as the **Dorian** or **Mixolydian** modes.

The "Long-D" Tuning

A popular variation for the 5-string kantele is tuning the lowest string down a whole step to C (creating C, D, E, F, G or C, D, E, F#, G). This provides a deep drone that can support melodies in G major or C major, significantly expanding the harmonic potential of only five strings. Many of the tunes in **Michael J. King's** guides utilize these varied tunings to provide a richer sonic landscape.

Step-by-Step Guide: Basic Maintenance and Restringing

Maintaining a kantele is essential for preserving its tuning stability and structural integrity. Because most small kanteles use **zither pins** (friction-based metal pins), they are sensitive to changes in humidity.

1. Humidity Control: Keep the instrument in an environment with 40-60% humidity. Rapid changes can cause the wood to shrink, causing the tuning pins to loosen or the soundboard to crack.
2. Restringing Procedure: When replacing a string, ensure it is wound neatly around the tuning pin. Overlapping the string upon itself on the first wind helps "lock" it in place.
3. The Varras Connection: In traditional designs, the strings loop around a single metal rod (the varras). It is crucial to ensure the loops are secure and that the rod is not bending under the collective tension of the strings.
4. Cleaning: Use a soft, dry cloth to wipe away skin oils from the strings after playing. This prevents corrosion and preserves the "bright" tone of the steel.

Comparative Evaluation: Small Kantele Materials

Material	Acoustic Properties	Durability	Suitability
Spruce (Soundboard)	High strength-to-weight ratio; excellent projection.	Moderate; prone to cracking if dry.	Standard for all high-quality box kanteles.
Birch (Body)	Dense and reflective; produces a bright, percussive sound.	High; very resistant to impact.	Ideal for carved instruments and frames.
Alder (Body)	Soft and light; produces a warm, mellow tone.	Moderate; easy to carve.	Traditional choice for carved 5-string instruments.
Steel Strings	Bright, high tension, long sustain.	Corrodes over time.	Modern standard for folk and concert use.
Brass Strings	Warmer, lower tension, softer attack.	Tarnishes but lasts long.	Historical reconstructions and "ancient" sound profiles.

Technical Challenges and Troubleshooting

Even with its simple design, the small kantele presents several technical challenges for the beginner and intermediate player.

Slipping Tuning Pins

This is the most common issue. Because the pins are held by friction, they may slip if the hole has become enlarged or the wood has dried. **Solution:**Apply a small amount of "pin dope" or chalk to the pin to increase friction. If the hole is severely worn, it may need to be reamed and fitted with a slightly larger pin.

String Buzzing

Buzzing usually occurs when a string is not making clean contact with the bridge or the varras. **Solution:**Check the angle of the string as it crosses the bridge. If the "break angle" is too shallow, the string will vibrate against the bridge surface. Increasing the height of the bridge or lowering the tuning pin can resolve this.

Uneven Volume Across Strings

This is often a result of inconsistent soundboard thickness or improper bridge placement. **Solution:**In box kanteles, ensure the bridge is seated firmly against the soundboard. For carved kanteles, thinning the soundboard slightly near the bridge can help increase the volume of the lower strings.

The Educational Impact of the Small Kantele

In modern pedagogy, the 5-string kantele is utilized as a foundational instrument for music education, particularly in the **Orff Schulwerk** approach. Its limited range prevents the student from becoming overwhelmed by note choices, allowing them to focus entirely on rhythm, ear training, and the physical sensation of vibration. Furthermore, the kantele is increasingly used in **music therapy**. The ethereal, harmonic-rich sound has been shown to reduce anxiety and provide a calming auditory environment for patients.

Integrating the Kantele into Modern Music

Beyond traditional folk music, the 5 and 10 string kanteles are finding homes in ambient, cinematic, and electronic

music. Composers use the instrument for its unique "ancient" texture, often processing the signal through granular synthesis or heavy reverb to create vast, shimmering soundscapes. The 10-string kantele, with its wider range, is particularly suited for modern modal compositions and can even be tuned to non-Western scales (such as Middle Eastern maqams) due to the flexibility of its friction-peg tuning.

Synthesis of Technical and Cultural Value

The 5 and 10 string kanteles are far more than historical artifacts; they are sophisticated acoustic machines designed to maximize resonance and musicality within strict physical constraints. Whether it is the carved alder body of a traditional 5-string or the joined spruce soundboard of a modern 10-string, these instruments represent a mastery of luthiery that prioritizes the relationship between the player and the vibrating string. For the technical practitioner, the kantele offers a masterclass in minimalist design, where every millimeter of wood and every gram of string tension contributes to a sound that has defined a national identity for over a millennium. By mastering the specific finger placements, understanding the physics of the varras, and maintaining the delicate balance of the wooden body, musicians continue to breathe life into this ancient Finnish voice, ensuring that the "guide for small kanteles" remains a living, evolving document in the global musical landscape.

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