Travertine has long been a popular material for stone tile flooring in many stages of construction projects due to having unique surface properties characterized by honeycomb structure. Significant differences may be observed in terms of both visual appearances on the rock surface and physical and mechanical behavior in the using area depending on the cutting direction.

In this study, different cutting directions were applied to travertine blocks and the effects of freezing–thawing and thermal shock cycles on the rock structure were experimentally investigated. The changes in the physical and mechanical properties of three different travertine types, such as uniaxial compressive strength, flexural strength, Bohme abrasion resistance, capillary water absorption and P-wave velocity values depending on the bedding direction were evaluated under the effect of freezing–thawing and thermal shock tests for 10, 20, 30, and 40 cycles. Qualitative results show that the freezing–thawing cycles have a more destructive effect on the mechanical properties in comparison to thermal-shock cycles through perpendicular loading conditions to the bedding planes in travertines.