

# Abstract

This Thesis is focused on the identification of the most relevant properties of artificial grass for padel with the aim of carrying out a standardization procedure.

Since padel is not a majority sport, technical documents to establish the properties of surfaces for this sport (mainly artificial turf) do not exist. This has caused that artificial turf installed in padel facilities does not have the most appropriate properties to ensure safety and performance of players, especially if the specific requirements of this sport are taken into account.

The work conducted in this thesis included the identification of the most frequent movements of players during padel matches. Then, their relevance was analyzed considering frequency as well as influence on safety and performance of players.

After the suitable identification described above, the most relevant players' movements were selected. Then, the regulatory framework was reviewed with the aim of identifying the most appropriate tests to evaluate artificial turf surfaces. Following this stage, different artificial turf padel courts were tested according to the standard methods detected.

From the results of these tests and from players' opinions, reference values for relevant properties of padel artificial turf were established. In the investigation, these properties were found to be force reduction, friction and vertical ball rebound.

Finally, these reference values were validated from players' opinions in two different scenarios: on one hand, after playing a padel match and, on the other hand, after going across a controlled circuit including specific padel movements. In both cases, subjective assessment of properties, safety and performance was analysed. Moreover, during controlled circuit test players wore three different models of sport shoes with the aim of identifying the effect of shoes on players' perception and performance.

The results obtained in the Thesis have allowed the development of a technical standard draft to regulate the properties of artificial turf surfaces for padel courts.