We investigated the activity and stability of $n=(1, 2, 3)$ platinum layers supported on a number of rutile metal oxides (MO$_2$; M=Ti, Sn, Ta, Nb, Hf and Zr). A suitable oxide support can alleviate the problem of carbon corrosion and platinum dissolution in Pt/C catalysts. Moreover, it can increase the activity of platinum if the interaction between the support and the metal is optimal. We found that both the activity and the stability depend on the number of platinum layers and, as expected, both converge toward platinum bulk values if the number of layers is increased. With use of a simple volcano curve for activity estimation, we found that the supported platinum layers could be active for the oxygen reduction reaction, with a few candidates possibly having an activity even greater than that of platinum. Furthermore, we established a correlation between stability and activity for supported platinum monolayers, which suggests that activity can be increased at the expense of stability and vice versa. Finally, the performance of the systems was evaluated against Pt(111) skins on Pt$_3$X (X=Ni, Co, Fe, Ti, Sc and Y) alloys, which are the best catalysts known to date for the reaction.