Abstract: I will explain how to approximate moduli spaces of topological surfaces of genus $g$ (equipped with a tangential structure, such as orientation, Spin structure, framing etc.) by moduli spaces of strictly less genus, and how this often implies that the homology of these moduli spaces stabilises with $g$. This extends the famous stability theorem of J. Harer on the homology of the oriented mapping class groups to new families of mapping class groups preserving a tangential structure. I will discuss new examples of such moduli space: surfaces with framings and surfaces with Pin structures.