



Why Do Some Exercise Balls Explode?

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Abstract

No scientific studies have been published regarding material engineering aspects of burst resistant exercise balls. This paper reports the results of failure investigations into the root cause of failure of exercise balls manufactured by several different companies. The investigation revealed different root causes of failure of exercise balls including: large variation in wall thickness, ruptured surface cells, and material flaw sensitivity.

Introduction

Exercise balls are used extensively by people for exercising/strength training (Figure 1), and by rehabilitation centers. When a person places their body weight on a ball and it suddenly explodes, serious injury can result. One can imagine what would happen to the woman shown in Figure 1 if the ball she is sitting on suddenly burst. Exercise balls are supposed to be manufactured to be burst resistant so that an accidental puncture during use does not result in a sudden collapse of the ball. The purpose of the current study is to better understand why some balls are burst resistant while others suddenly burst during use resulting in serious injuries. The authors seek to provide information that will help educate exercise ball manufacturers of the importance of good manufacturing practices and how to improve quality control processes aimed at identifying defective exercise balls.



Fig. 1. Photograph showing a woman doing weight training using an exercise ball.
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