Pulmonary Function and Intercostal Constriction by Sports Bras in Distance Runners

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This research sought to determine a relationship between the force exerted on the thoracic region by a sports bra and the lung function of the wearer. This query was inspired by high school distance runners who observed that they experienced greater respiratory distress during speed workouts when wearing certain sports bras. Lung function was assessed with a diagnostic spirometer and the forces exerted by each bra on two latitudes (the fullest part of the chest and below the breasts) of the participants' thoracic region was calculated. Static forced vital capacity (FVC) tests were conducted while sitting. Each of 15 participants tested without a bra, and with a looser, normal, and tight-fitting sports bra. Each condition was tested on a different day. Dynamic maximum voluntary ventilation (MVV) tests were performed while participants ran on a treadmill. Data was collected after three minutes as they ran at their threshold pace. Dynamic testing began recently due to availability of participants and equipment. During static testing, between no bra and tightest bra conditions, 40% of the participants experienced insignificant change in lung function (FEV1/FVC), 40% decreased, and 20% increased. The data shows no direct correlation between sports bra pressure and static lung function. During dynamic tests, between no bra and tightest bra conditions, 60% of participants' L/min MVV decreased, and 40% increased. Dynamic testing results are still being collected at this time so conclusions in this area are pending on augmentation of sample size.

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