

# Electroconvulsive Therapy Does Not Cause “Brain Damage”

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Electroconvulsive therapy (ECT) is a miraculous treatment that leads to remission of severe psychiatric disorders,<sup>1</sup> mitigates suicide risk,<sup>2</sup> reverses catatonia,<sup>3,4</sup> and improves quality of life<sup>5,6</sup> and function.<sup>5,7</sup> Side effects include circumscribed retrograde autobiographical amnesia and transient anterograde verbal amnesia, but these are minimized with modern ECT techniques, even in older persons.<sup>8,9</sup> The memory side effects of ECT play a small and largely nonsignificant role in ECT's positive effects on quality of life, with the exception that ECT can actually improve global memory function with an accompanying improvement in overall social function.<sup>5</sup> Despite its extraordinary track record, ECT is subjected to gratuitous and meritless attacks. Many of the attacks are related to activities of the Church of Scientology and its adherents.<sup>10</sup> A common refrain from the Church of Scientology is that ECT causes “brain damage,” but we will not use this space to air out their case.

The term “brain damage” is a nonmedical term that may be used in provocative ways intended to inflame an argument. Dr. Swartz's paper “What is brain damage and does ECT cause it?” is a scholarly approach to addressing these criticisms, first by focusing on the proper medical concern “brain injury,” not brain damage.<sup>11</sup> The paper methodically describes findings that would be expected in humans that have experienced brain injury, detailing multiple assay methods including anatomical brain imaging, biochemical indicators of brain injury, histological examination of the brain, and epidemiology of major neurocognitive disorders. In each instance, Dr. Swartz was able to show that ECT did not produce results consistent with brain injury.

Critics of ECT are quick to point to the electrical stimulus as the source driving their claims of “brain damage.” However, Dr. Swartz has previously reported on models of the physical properties of the electrical stimulus used in ECT and was able to demonstrate that mathematical models examined in animal tissue showed negligible changes in temperature and voltage drops at the level of the brain neuron, well below any threshold that would produce brain injury.<sup>12</sup>

The critics of ECT who level a charge of “brain damage” place heavy reliance on very old human data accumulated before the adoption of modern ECT clinical methods and, similarly, rely upon animal models from decades ago that use measurement assays that are suspect. Unfortunately, the criticisms are in alignment with dramatic Hollywood portrayals of ECT that while riveting are completely out of step with actual practice.<sup>13</sup>

Irrational criticisms of ECT show no signs of letting up anytime soon, and so the scientific field must continue to push back and provide solid evidence and arguments against the toxic tide of misinformation. Dr Swartz's review paper is a welcome addition to the effort.

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