

DIAGNOSTIC RADIOLOGY PHYSICS:
A HANDBOOK FOR TEACHERS AND STUDENTS

Non-Serial Publications
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CORRIGENDUM

1. Page 43. TABLE 3.1. Changes have been made to the values and units of the second and third column.

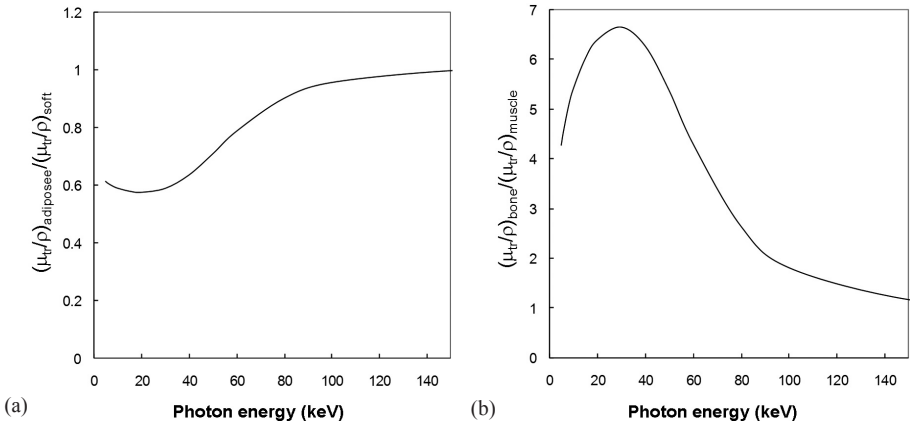


FIG. 3.2. Ratio of mass energy transfer coefficients for some tissue pairs: (a) adipose to soft tissue; (b) cortical bone to skeletal muscle.

Nonetheless, as Table 3.1 shows, the ranges of electrons set in motion by photons used in diagnostic radiology are small in biological tissues (water has been chosen in this table to simulate all the soft tissues), being less than 1 mm for most of the energies. This indicates that the changes in absorbed dose at the interface between two tissues in the body are limited to small regions. For comparison, Table 3.1 also shows the range of electrons of kinetic energy 1.0 MeV that are released by photons used for external radiotherapy. In this case, the changes in absorbed dose extend to a much greater distance — a few centimetres. This is further discussed in Section 3.3.

TABLE 3.1. RANGE OF ELECTRONS IN WATER AND IN BONE

Electron energy (keV)	Range in water ^a	Range in compact bone ^a
10	2.52 μm	1.49 μm
20	8.57 μm	5.05 μm
50	43.2 μm	25.3 μm
80	97.7 μm	57.1 μm
100	0.143 mm	0.084 mm
150	0.282 mm	0.164 mm
1000	0.437 cm	0.255 cm

^a Values of continuous slowing down approximation range obtained with the ESTAR program [3.1].