the incidence of abnormalities and does not affect the ability of the puppy to attain its normal adult size. The goal of feeding is to provide all the essential nutrients while keeping the growing puppy "lean." Puppies should look trim, with only a slight layer of fat over the ribs. The puppy is too fat if the ribs cannot be felt with gentle pressure on the rib cage. The puppy is too thin if the ribs can be seen easily when the puppy moves.

■ Senior Dogs

It can be difficult to determine the energy needs of the senior pet. Dogs are considered to be senior when they have reached half their life expectancy; thus, most are considered to be senior at about 7 years of age. The daily energy requirement of a senior dog is very dependent on body condition, activity level, reproductive status, and the presence of underlying medical conditions. Many senior dogs are still very active in performance events, and some females may still be reproducing; thus, these seniors will have increased energy requirements. However, senior dogs are more prone to obesity and thus would require a lower daily energy requirement. As dogs get very old, the daily energy requirement may be higher because of decreased digestion of nutrients and underlying medical conditions.

For the healthy adult senior dog over 7 years of age with reduced activity level, the daily energy requirement should be decreased to avoid the occurrence of obesity. The daily energy requirement in this case is calculated by the formula DER = 1.1 × RER and can be found in Table 4.9. For older dogs that do not digest nutrients well or that have underlying medical conditions, the daily energy requirement could be similar to that for an intact adult dog (Table 4.1). Senior dogs must be monitored closely for body weight and body condition, with adjustment of daily energy intake as needed.

■ Gestation

Daily energy needs increase during gestation, and those needs are dependent on the prior nutritional status of the bitch, size of the bitch, and the number of fetuses carried by the bitch. During the first 5 to 6 weeks, most dogs do not require additional energy, although in about the sixth week of gestation the amount of energy fed could be increased. The daily energy requirement increases during the last few weeks of gestation, while the fetuses are rapidly growing. The daily energy requirement for the early weeks of gestation is calculated by the

Table 4.9. Daily energy requirement (DER) for healthy, inactive senior dogs.[a]

BW (lb)	Daily kcal	BW (lb)	Daily kcal	BW (lb)	Daily kcal	BW (lb)	Daily kcal
1	43	53	837	105	1398	157	1891
2	72	54	849	106	1408	158	1900
3	97	55	861	107	1418	159	1909
4	121	56	873	108	1428	160	1918
5	143	57	884	109	1438	161	1927
6	163	58	896	110	1448	162	1936
7	183	59	907	111	1458	163	1945
8	203	60	919	112	1468	164	1953
9	221	61	930	113	1477	165	1962
10	240	62	942	114	1487	166	1971
11	257	63	953	115	1497	167	1980
12	275	64	965	116	1507	168	1989
13	292	65	976	117	1516	169	1998
14	309	66	987	118	1526	170	2007
15	325	67	998	119	1536	171	2016
16	341	68	1009	120	1545	172	2025
17	357	69	1020	121	1555	173	2033
18	373	70	1032	122	1565	174	2042
19	388	71	1043	123	1574	175	2051
20	403	72	1054	124	1584	176	2060
21	418	73	1065	125	1594	177	2068
22	433	74	1075	126	1603	178	2077
23	448	75	1086	127	1613	179	2086
24	462	76	1097	128	1622	180	2095
25	477	77	1108	129	1632	181	2103
26	491	78	1119	130	1641	182	2112
27	505	79	1130	131	1651	183	2121
28	519	80	1140	132	1660	184	2130
29	533	81	1151	133	1669	185	2138
30	546	82	1162	134	1679	186	2147
31	560	83	1172	135	1688	187	2156
32	574	84	1183	136	1698	188	2164
33	587	85	1193	137	1707	189	2173

Table 4.9. ***(cont.)***

BW (lb)	Daily kcal	BW (lb)	Daily kcal	BW (lb)	Daily kcal	BW (lb)	Daily kcal
34	600	86	1204	138	1716	190	2181
35	613	87	1214	139	1726	191	2190
36	626	88	1225	140	1735	192	2199
37	639	89	1235	141	1744	193	2207
38	652	90	1246	142	1753	194	2216
39	665	91	1256	143	1763	195	2224
40	678	92	1266	144	1772	196	2233
41	691	93	1277	145	1781	197	2241
42	703	94	1287	146	1790	198	2250
43	716	95	1297	147	1800	199	2258
44	728	96	1307	148	1809	200	2267
45	741	97	1318	149	1818	205	2309
46	753	98	1328	150	1827	210	2351
47	765	99	1338	151	1836	215	2393
48	777	100	1348	152	1845	220	2435
49	789	101	1358	153	1854	225	2476
50	801	102	1368	154	1863	230	2518
51	813	103	1378	155	1873	240	2599
52	825	104	1388	156	1882	250	2680

BW, body weight.
[a]DER = 1.1 × RER (resting energy requirement).

formula DER = 1.8 × RER. The daily energy requirement for the last weeks of gestation is calculated by the formula DER = 3 × RER. Daily energy requirements for early and late gestation in dogs are found in Tables 4.10 and 4.11, respectively.

■ Lactation

Milk production places the largest nutritional demands on the dam. She must metabolize very large amounts of nutrients in order to produce sufficient milk to support the growth of her puppies. Dams with a large litter may require four times more calories during lactation than they needed for maintenance. Peak milk production occurs when the puppies are 4–5 weeks of age, right before they are weaned. The daily energy requirement for lactation for dams nursing up to four