Index

Page numbers in italics refer to figures and tables.

Aarhus (Denmark), skeletal maturity study, 150
adolescent growth spurt in pygmies, 75
adolescent height and weight variation, 27
adult size
  Africans, 274
  Asians, 292–3
  Australian Aborigines, 320–1
  Indo-Mediterraneans, 309
  Pacific Islanders, 320–1
affluence and altitude, 204
Relationship to height and weight, 199
African ancestry
  adult size, 274
  biacromial width, 277
  biiliac width, 278
  growth studies, 66, 68
  height, 266–7, 268–9
  infant size, 275
  sitting height, 276
  weight, 270–1, 272–3
Africans
  adult, 79
  adult size, 274
  arm length, 186
  biacromial width, 83, 277
  biiliac width, 83, 278
  bone density, 190
disease, 63
  ethnic groups, 67–8
  fat patterning, 215
  growth studies, 63, 64–6, 67–9
  height, 69, 70, 72, 74–5, 76, 77, 266–7, 268–9
  infants, 80–1, 275
  malnutrition, 63
  menarche age, 168
  ossification centre visibility, 154
  permanent tooth emergence, 161
  privation effects on size and weight for height, 79
  shoulder width, 83
  sitting height, 81, 82, 276
  skeletal development, 155
  skeletal maturity, 152
  skinfold thickness, 85, 86–8, 89, 281–2, 283
  slaves in America, 75, 76, 77
  upper arm circumference, 84, 279–80
weight for height, 77, 78, 79
  weight, 69, 71, 73, 74–5, 77, 270–1, 272–3
Afro-Americans, 68–9
  adult height, 79
  bone age, 183
  fat patterning, 215
  genitalia development age, 173
  height, 69–77, 180, 181, 182, 183
  hip to shoulder width relationship, 188
  leg length, 185, 186
  menarche age, 168
  obesity, 74
  ossification centre visibility, 154
  population study, 180
  sexual development, 174
  sitting height, 112, 185
  skeletal maturity, 148, 151
  skinfold thickness, 85, 86–8, 89, 189, 215
  socioeconomic differences, 79
  weight, 73–7, 183, 184
age
  conversion of calendar to decimal, 6–7
  estimates, 14–15
  group classification, 8
  intervals, 21–2
Aka pygmies, 68, 74, 75
altitude
  and affluence, 204
  birth weight, 203
  growth effects, 108, 203–4
  infant growth, 108, 109, 203
  menarche age, 168
Amerindians, 90
adults, 108
fat patterning, 215
growth studies, 90, 92, 93
height, 94, 95, 97
infants, 108, 109
ossification centre visibility, 154
secular trends, 102, 104–5, 211
skeletal maturity, 149
skinfold thickness, 114–16
upper arm circumference, 113–14
weight, 98, 99, 101
weight-for-height, 106, 107, 108
anthropometer, 34
Anthropometric Standardization Reference Manual, 22
Arab Nubians, 129
Arctic Eskimos, 90
fat patterning, 215
Argentina
skinfold secular trends, 58, 62
weight for height of European descendants, 51, 53
arm circumference see upper arm circumference
arm fat, see triceps skinfold thickness
arm length
Africans, 186
Europeans, 238–9
sitting height relationship, 187
Ascaris lumbricoides, 63
Asiatics
adults, 108, 292–3
biacromial width, 112, 298
biliac width, 112, 299
ethnic groups, 90
growth studies, 90, 91–3, 94
height, 284–5, 286–7
hip width, 112–13, 299
infants, 108, 109, 294–5
leg length and sitting height, 111
puberty and leg length, 186
pubic hair growth, 174
shoulder width, 112–13
sitting height, 110–12
skinfold thickness, 114, 115, 116, 190, 302–3, 304
upper arm circumference, 113–14, 300–1
weight, 288–9, 290–1
weight-for-height, 106, 107, 108
atherosclerosis, 213
Australia
menarcheal age, 171
national fitness survey, 47
secular changes, 48–50
upper arm circumference, 57, 58
urbanization, 203
Australian Aborigines
adults, 140, 320–1
growth studies, 130, 131, 133
height, 316–17
height and weight growth, 133, 134, 135, 136
hip width, 142–3
infant mortality, 142
infants, 140, 141, 142, 322–3
leg length, 185, 186
leg to trunk length, 142
nutritional status, 130
permanent tooth emergence, 161
secular change, 137–8
shoulder width, 142–3
sitting height, 185, 186, 324
weight, 318–19
weight for height, 138–9, 140
Austria, skeletal maturity study, 150
auxological anthropometry see growth, measurement techniques
auxology, epidemiological, 198
Aymara (Chile and Bolivia), 98, 108
Bantu, 67–8
Belgium, social mobility, 201
biacromial width
Africans, 83, 277
Asians, 112–13, 298
European descendants, 56, 57, 261
Europeans, 35, 36–7, 38, 239, 240
Papua New Guinea, 325
racial differences, 188
bicrystal width, 38
biliac width
Africans, 83, 278
Asians, 299
European descendants, 56, 57, 257
Europeans, 35, 36–7, 38, 241, 242
Papua New Guinea, 326
racial differences, 188
birth weight
altitude, 203
blood pressure, 211
dental development effects, 157
Index

maternal nutrition, 194, 195
siblings, 178
smoking, 205
blood pressure
children, 213
weight change, 212
weight-for-height, 212–13
Bolivia
altitude effects, 204
La Paz growth survey, 47
skinfold thickness, 58
bone
centre visibility, 146
density, 190
bone age
from birth to two, 154–5
population studies, 183
undernourishment, 198
see also skeletal maturity
Brazil
genitalia development age, 173
São Paulo study, 47
breast
development, 172
feeding of Indian infants, 126
breast cancer
anthropometric measurements, 210
childhood size, 210
fat intake, 220
Japanese incidence, 220, 221
Britain
poverty, 201
social class effects, 198–9
unemployment effects on children, 201
see also United Kingdom
British National Child Development Study, 9
British National Pre-school Surveillance, 199
British National Survey of Health and Growth, 201
Bundi (Papua New Guinea), 130
food supplementation, 192, 193
height and weight growth, 135
leg to trunk length, 142
skinfold thickness, 143–4

C, and weight, 126
calf-circumference
European ancestry, 259
Europeans, 38, 39, 40

Cali (Colombia)
growth survey, 47
upper arm circumference, 57, 58
Canada
menarche age, 169–70
Quebec studies, 44, 45
skeletal maturity, 151
upper arm circumference, 57, 58
cancer
body weight, 212
child growth, 210, 221
dietary restriction, 222
fat intake, 220
height correlation, 208–9
migration, 219
nutritional patterns, 221
Caracas
infant growth, 53, 54
upper arm circumference, 57, 58
skinfold thickness, 58, 59–60
cardiocvascular disease
body weight, 212
Caribbean, 222
child growth, 210–11
Caribbean, 222
skeletal maturity study, 152
catch-up growth, 192, 193
growing period, 192
skeletal maturation, 192
velocity, 191, 192
centile
cross-sectional studies, 5
height distribution, 4
Central African Republic, 74, 79
Chachi Indians, 98, 104
chest circumference
European ancestry infants, 255–6
European infants, 234–5
European studies, 38
Chile, 47
Chinese
genitalia development age, 173
hip to shoulder width relationship, 188
infants, 108
leg length, 185
leg length and sitting height, 111
menarche age, 168
ossification centre visibility, 154
puberty, 149
secular trend, 103, 206
sitting height, 110, 111, 185, 186
skeletal development, 155
Index

skeletal maturity, 149
skinfold thickness, 116, 189
weight-for-height, 106
Chinese immigrants to California, 94
skinfold thickness, 116
Chippewa Indians, 98
climatic variation, 203–4
Colombia, 57, 58
Cali growth survey, 47
colon cancer, 220
coronary heart disease
childhood origins, 213
fat patterning, 218
migration, 219
Cree Indians, 106
cross-sectional study methods, 4–5, 8
numbers in age groups, 8
planning, 10
crown–rump length measurement, 24, 26
European studies, 34–5
Cuba
infant growth, 53, 54
secular weight changes, 49, 50
weight for height of European descendants, 51, 53
Cuban National Growth Survey, 10
Dakar
Comparison with slaves in America, 77
ossification centre visibility, 154
skeletal maturity 152
Denmark
bone age, 183
height, 180–1, 182
menarcheal age, 170
skeletal maturity, 150
weight, 183, 184
dental development, 155–9, 160, 161
birthweight, 157
genetic control, 156
maternal smoking, 157
nutritional effects, 156–7
weight and height influence, 157
dental maturity, 145, 146
dental maturity assessment, 155–9, 160, 161
deciduous dentition, 156–8
permanent dentition, 158–9, 160, 161
radiographs, 155
tooth emergence, 156
dentition, deciduous, 156–8
emergence, 157, 334
order of emergence, 158
socioeconomic effects, 157–8
dentition, permanent, 158–61, 335–6
developing countries
birth weight, 194
environmental differences amongst
population, 191
infant nutrition, 194
supplemental infant feeding, 194
weaning effects, 194
diabetes
body mass index, 213
body weight, 212
fat patterning, 218
migration, 220
diarrhoeal diseases, 192
dietary restriction and adult disease, 222
disease, adult chronic
cancer, 221
cardiovascular disease, 222
child environment, 222
child growth, 208
dietary restriction, 222–3
fat patterning, 215, 218–19
Japanese migrants, 219–20
Mexican migrants, 219–20
nutrition, 210, 219–23
obesity, 213–14
skinfold thickness, 213–14
disease in Africa, 63
diversity of man, 2
Egyptians, 117
Efe pygmies, 79
England
adolescent growth, 196–7
infant size changes, 34
environment
body size, 191
growth effects, 3, 4
suitability for human genotype, 4
environmental influence on growth, 191–207
boys, 200
climatic variation, 203–4
pollutants, 205
psychosocial stress, 204–5
school, 204–5
season, 203–4
secular trends, 205–7
socioeconomic level, 198–202
Toxins, 205
Index

urbanization, 202–3
epidemiological auxology, 198
Eskimos see Arctic Eskimos
European descendant infants
  chest circumference, 255–6
  growth, 53, 54
  head circumference, 255–6
  weight, 255–6
European descendants
  biacromial width, 56, 57, 261
  biiliac width, 56, 57, 257
  calf circumference, 57, 259
  growth studies, 44, 45–6, 47
  height, 47–50, 251, 252
  height comparisons with European sedentis, 47–8, 49
  hip width, 257
  migrants, 44
  secular trends in height and weight, 48–50
  shoulder width, 56, 57, 261
  sitting height, 53, 55, 57, 260
  skinfold thickness, 58, 59–61, 62, 262–3, 264–5
  upper arm circumference, 57, 58, 258
  weight, 47–50, 253, 254
  weight-for-height, 50, 52, 53
Europeans, 17, 18–20, 21–2
  arm length, 238–9
  biacromial width, 240
  biiliac width, 241, 242
  bone density, 190
  calf circumference, 38, 39, 40
  chest circumference, 38
  cross-sectional, 17
  crown–rump measurement, 34–5
dental development, 160, 161
environmental height differences, 27
fat patterning, 215
[...]

sex differences, 27–8, 29
sexual development, 173
shoulder width, 35, 36–7, 38
sitting height, 34–5, 36, 226–7
skeletal maturity, 148
skinfold thickness, 40, 41–2, 43, 85, 89, 246–7, 248, 249, 250
upper arm circumference, 38, 39, 243, 244
weight of boys, 280–1
weight of girls, 232–3
weight for height, 28, 29, 30–2
Europeans in America
genitalia development age, 173
menarchal age, 168
skeletal maturity, 151
skinfold thickness, 189

family
  body measurement resemblance, 178–9
  environmental influence, 179
  genetic influence on growth, 176–9
  likeness, 2–3
  number of children, 202
  resemblance studies, 178
  tendency to become unemployed, 201
fat
  absorption and intestinal parasites, 63
  deposition and adult adiposity, 214
fat patterning, 190, 215, 216, 218–19
coronary heart disease, 218
diabetes, 218
genetic influence, 218
skinfold thickness, 40, 215
trunk, 218, 219
Fels Longitudinal Research Study, 206
Finland, dental development, 157
follow-up studies, 9
genetic differences, 3
[...]

Grazi (Austria), skeletal maturity study, 150
Greulich–Pyle standards of skeletal maturity, 146–9
skelatal age, 330, 331
growth
  age intervals, 21–2
  fitness relationship, 169
Index

measurement techniques, 22, 23–5, 26
potential, 1

growth hormone
deficiency and catch-up growth, 192
Mountain Ok people, 135
psychological stress, 204
growth standards, 10–16
age estimates, 14–15
discrete events, 12–14
height, 10–12
individual, 15
menarche, 12–14
population, 15
pubertal stages, 14
single universal, 15
Guatemala, nutritional stunting in height, 194

Hamites, 117
hand–wrist maturity, 146
head circumference
European ancestry infants, 255–6
European infants, 234–5
health and child’s growth, 1

Health and Nutrition Examination Survey
see NHANES

height
adult, 79, 108, 125, 140
affluence, 199
African ancestry, 266–7, 268–9
Africans, 69–77, 266–7, 268–9
age grouping, 21, 22
Asiatics, 94–102, 284–5, 286–7
Australian Aborigines, 133–5, 316–17
boys, 5
cancer incidence, 208
cross-sectional study, 4
economic history, 198
Europeans, 226–7, 228–9
European descendants, 47–50, 251, 252
European sedentes, 47–8, 49
European studies, 26–7
family effects, 178, 202
genetic effects, 178
Indo-Mediterraneans, 120–3, 305, 306
mortality relationship, 208, 209
number of children in family, 202
Pacific Islanders, 133–8, 316–17
populations, 180–1, 182, 183
secular trend, 30, 31–2, 205–6
social class, 198–200
social mobility, 200–1

standards, 10–12
velocity, 11, 12, 13
height-for-age charts, 11–12
Hindus, 120, 125

hip width
Africans, 278
Asiatics, 112–13, 299
Australian Aborigines, 142–3
Europeans, 241
European descendants, 56, 57, 257
European studies, 35, 36–7, 38
Pacific Islanders, 142–3
Papua New Guinea, 326
racial differences, 188

Hispanic Health and Nutrition Examination Study (HHANES), 94
Honduras, nutritional stunting in height, 194
Hong Kong
dental development, 161
secular trends, 102
skeletal maturity, 152, 153
hypothyroidism, catch-up growth, 192
hypoxia, 203, 204

Ibadan
infant growth, 80–1
shoulder width, 83
sitting height, 81, 82
skinfold thickness, 85, 86–7
upper arm circumference, 84

IgA and weight, 126

illness
dental development, 161
energy requirements, 191–2
growth pattern, 191
growth restriction, 192
immigrant populations, genetic differences, 198
immune capacity and weight, 126

Indians
adolescent growth, 196
height and weight growth, 120, 123
infant weight and length, 126
menarcheal age, 168

nutritional status, 123
ossification centre visibility, 154
sex differences in infant feeding, 16
skeletal maturity, 151

weight-for-height, 125

Indo-Dravidians, 117
Indo-Mediterraneans
adult height and weight, 125, 309
ethnic groups, 117
Index

growth studies, 117, 118–19, 120
height, 305, 306
height and weight growth, 120, 121–2, 123
infant size, 125–6, 310–11
skinfold thickness, 128–9, 309, 313–14, 315
upper arm circumference, 126–7, 309, 312
weight, 307, 308
weight-for-height, 123, 124, 125
Indonesian-Malays, 90
adolescence, 98
height growth, 94, 95–6
maturity age, 98
secular trends, 102–4, 105
skinfold thickness, 116
weight, 98, 99–100
weight-for-height, 106

industrialization
obesity in lower socioeconomic groups, 211–12
secular trends, 205–7
weight-for-height gradient, 202
infant feeding practices, 34
infant growth
European descendants, 53, 54
factors affecting, 126
infant mortality
Aborigines, 142
Punjabi, 126
rate, 1
infant size
Africans, 275
Asians, 294–5
Australian Aborigines, 322–3
Indo-Mediterraneans, 310–11
Papua New Guinea, 322–3
infants from birth to 18 months, Europe, 32, 33, 34
infection, childhood, 191
growth pattern, 191
insulin-like growth factor I (IGF-I)
African pygmies, 75, 135
Mountain Ok people, 135
International Biological Programme
Human Adaptability Section, 1
sitting height methods, 34
intestinal parasites, 63
Ituri pygmies, 68, 74, 75, 79
Jamaica, skeletal maturity study, 152

Japanese
adolescent growth, 196–7
atomic bomb, 200
bone age, 183
breast cancer, 220, 221
dental development, 158
dietary restriction, 222
height means, 189, 181, 182, 183
leg length and sitting height, 112
menarcheal age, 168, 171
migrants, 219–20
puberty, 149
secular trends, 103–4, 206
sitting height, 110, 112
skeletal development, 155
skeletal maturity, 149, 151–2
skinfold thickness, 116, 189
stature change, 112
weight study, 183, 184

Kenebar (Gambia), secular change, 63
Khartoum, peak height velocity, 123
Khosians, 68
kneunometer, 191
Kuwaitis, 117
kwashiorkor, 195

La Paz (Bolivia)
altitude effects, 204
growth survey, 47
skinfold thickness, 58
lactation, growth effects, 194
Latin American children, weight-for-height, 108

leg length
environmental conditions, 186
secular trends, 206
subischial, 35
to trunk length of Australian Aborigines, 142

length, infants from birth to 18 months
Africans, 80
Asiatics, 108, 109
Australian Aborigines, 140, 141
Europe, 32, 33, 34
European descendants, 54
Indo-Mediterraneans, 125–6
Libyans, 117
life expectancy and bodyweight, 211
linear growth, altitude effects, 108
London Longitudinal Study, skeletal maturity, 150
Index

longitudinal study methods, 8–10
linked, 9
mixed, 9
planning, 10
Louisville Longitudinal Study, 177
Love Canal toxic dump, 205
lung disease, body weight, 212

Machakos (Kenya), growth comparison with slaves in America, 75, 76, 77
Mali, male stature, 63
malnutrition
in Africa, 63
catch-up growth, 192
chronic adult disease, 219
subsequent feeding, 195

Manduar (Gambia), secular change, 63
Manus, 130
birth-weight, 140
height and weight growth, 135
secular change absence, 211
shoulder and hip width, 142–3
skinfold thickness, 143–4
weight-for-height, 138–9

Maoris
height, 133
menarche age, 168
marasmus, 195
maturation rate, 3, 145
maturity
environmental influences, 145
hereditary influences, 145
measures of, 145
nutritional effects, 146
Maya Indians, 98, 108
measles, 191–2

Mediterranean countries, menarche, 168
menarche, 12–14, 161, /62–5, 165–72
age in different countries, 188
age and secular trends, 207
altitude, 168
blindness, 172
child spacing correlation, 172
climatic influence, 171
data collection methods, 165–7
defealessness, 172
delayed, 192
genetic factors, 171
height at, 197
industrialization effects, 170
infant mortality correlation, 172
Mediterranean countries, 168
northwest Europe, 168
nutritional effects, 168–70
physical exercise, 172
prospective data collection, 166–7
retrospective data collection, 167
secular trend, 179–1, 207
slimness, 169–170
social class, 169–71, 198, 200
social conditions in infancy, 171–2
status quo data collection, 165–6
time of, 145
urbanization, 203

Mexican-Americans, 98
adult growth, 108
diabetes risk, 220
fat patterning, 218
leg length, 186
length and sitting height, 111
migrants, 219, 220
nutrition and health supplementation programs, 105
secular change absence, 211
sitting height, 110
skinfold thickness, 116, 190, 217, 218–20
upper arm circumference, 113–14
weight-for-height, 106, 108, 188

Mexicans
leg length, 186
migrants, 219
skeletal maturity, 151
migration, 219–22
diabetes, 220
Samoans, 135
trunk adiposity, 144

Mogadish (Somalia)
height and weight growth, 69
upper arm circumference, 84
weight for height, 77

Mongols, 90
Montreal (Canada)
menarche age, 169–70
skeletal maturity, 151

mortality
body mass index, 212
cardiovascular, 210–11
child growth, 208
height relationship, 208, 209

Multinational Andean Genetic and Health Program, 90

Namibia, skeletal maturity, 152
Index

National Center for Health Statistics (NCHS), 69
National Health and Nutrition Examination Surveys see NHANES
Nepalese, 129
Netherlands
age at menarche, 207
secular trends, 37, 206
skeletal maturity, 150
wartime famine, 195
NHANES, 44, 180
Afro-Americans, 77, 78
skinfold thickness, 88, 89
sitting height, 81, 82
Nigeria, economic circumstances and deciduous dentition, 157–8
Nilo-Hamites, 67
Nilotes, 67
adult height, 79
height means, 74
Turkana, 69
Norway
height and mortality, 208
leg length, 185, 186
menarcheal age, 169–70, 170, 171–2
sitting height, 185, 186
nutrition
adolescence, 196–7
birth weight effects, 194
breast cancer link, 210
chronic adult disease, 219–23
developed areas, 3
growth effects, 191, 222
growth tempo, 198
infancy, 194–6
leg length, 196
low and adult size, 195
maturity effects, 145–6
menarcheal age, 168–70
migrant groups, 219–22
permanent dentition effects, 158
sitting height, 196
skeletal maturity, 153
stunting in height, 194
nutritional status, 1
infant growth, 126
nutritional stress and body shape, 195–6
obesity
adolescence, 214
childhood, 3, 213–14
disease risk correlation, 212
environmental factors, 214
inheritance, 214
skinfold thickness, 40, 213–14
socioeconomic level, 202
trends, 211–13
urbanization, 218
Ok-speaking people (Papua New Guinea) adults, 140
height and weight growth, 133, 134, 135
weight for height, 138
Oslo (Norway), menarcheal age, 169, 170
ossification centre visibility, 154
Otos, 81
overnutrition and chronic adult disease, 219–23
Oxfam, African work, 63
Pacific Islanders
adult size, 140, 329–1
growth studies, 130, 131–2, 133
height, 316–17
hip width, 142–3
infants, 140, 141, 142
secular change, 137–8
shoulder width, 142–3
sitting height, 324
skinfold thickness, 140, 143–4, 328, 329
weight, 136, 318–19
weight for height, 138–9, 140
Pakistani, 120
Papua New Guinea adults, 140
biacromial width, 325
biiliac width, 326
food supplementation, 192, 193
growth studies, 130, 131, 133
hip width, 326
infant size, 322–3
permanent tooth emergence, 161
relationship between measures of maturity, 175
shoulder width, 325
skeletal maturity, 153
skinfold thickness, 143–4
upper arm circumference, 143, 327
weight for height, 138
Papua New Guinea Institute of Medical Research, 130
peak height velocity (PHV)
age at, 175
Indian children, 123
Index

Khartoum, 123
Preece–Baines Model I, 175
twin studies, 178
permanent dentition, 158–9, 160, 161
emergence phases, 159, 160
environmental influences, 158
nutritional effects, 158
quiescent period, 159, 161
third molars, 161
Peru, preschoolers and malnutrition, 194–5
phenotypic differences, 3
Philadelphia (USA), skeletal maturity, 151
Poland
dental development, 158
infant size, 140, 141
infant weight and length, 108, 109, 125, 126
skeletal maturity, 150
social class and menarcheal age, 198, 200
urbanization, 202–3
pollutants, 205
population density, industrial-urban, 4
population studies
bodily proportions, 185–6, 187, 188–9
bone age, 183
generic influence on growth, 179–89
height, 180, 181, 182, 183
racial mixture, 190
skinfold thickness, 189–90
weight, 183, 184
poverty
birth weight, 194
culture of, 201
growth deficit in infants, 194
height effects, 191
Practical Human Biology, 22
Preece–Baines Model I, 175
protein-calorie malnutrition, 195
psychosocial stress, 204
pubertal maturity, 145, 146
puberty
height and weight variation, 27
and leg length, 186
nutrition and, 196–7
stages, 161, 162–3, 165–75
pubic hair growth, 172, 174
pubic health, 1
Punjabis
dental development, 161
menarcheal age, 168
Puno (Peru), 104–5
Pygmies, 68
adolescent growth spurt, 75
adult, 79, 274
ecology, 74
genetics, 74
growth studies, 74–5
infant, 80, 81, 275
Quichua, 98, 104, 105, 108
fat patterning, 215
ossification centre visibility, 154
sitting height, 110
skeletal maturity, 149
radiographs
hand–wrist, 146
teeth, 155
recommended dietary allowances for
adolescents, 196
Samoaans
adults, 140
growth studies, 132, 133
height and weight growth, 133, 135
migration, 220
weight for height, 138
sanitation, infant growth, 126
Santiago
studies, 446, 47
upper arm circumference, 57, 58
São Paulo
infant growth, 53, 54
Santo André study, 47
Scandinavia, poverty elimination, 201
school and pupil stress, 204–5
season
food scarcity, 203–4
growth effects, 203–4
secondary sex characteristics, 337, 338
age see pubertal maturity
secular trends, 205–7
absence, 211
height, 31, 34, 48–50, 63, 102–5, 135,
137–8, 211
infants, 33, 34
skinfolds, 58, 61, 88, 89
weight, 50, 51, 105, 211, 213
sexual development, 161, 162–5, 165–75
menarche, 161, 162–3, 165–72
relationship between measures of
maturity, 175
stages of puberty, 172–4
Index

testes, 174–5
twin studies, 178
sexual dimorphism
African height, 79
Asiatic height, 106
height, 27–8, 29
size, 29, 30, 32
shoulder width
Africans, 83, 277
Asiatics, 112–13, 298
Australian Aborigines, 142–3
European descendants, 56, 57, 261
Europeans, 240
European studies, 35, 36–7, 38
Pacific Islanders, 142–3
Papua New Guinea, 325
racial differences, 188
siblings, 176
birthweight, 178
resemblance studies, 178
Sikhs, 120, 125
sisters, menarche, 145
sitting height
Africans, 81, 82, 276
arm length relationship, 187
Asiatics, 110–12
Australian Aborigines, 324
European descendants, 53, 55, 57, 260
European studies, 34–5, 36, 236–7
Ibadan, 81, 82
and leg length, 15, 81, 82, 111, 142, 185–7
measurement, 24, 26
NHANES II, 81, 82
Pacific Islanders, 324
skeletal age
Greulich–Pyle Atlas, 330, 331
Tanner–Whitehouse method, 332, 333
skeletal maturity, 145, 146–55
bone age from birth to two, 154–5
chronological age, 146–7
Greulich–Pyle standards, 146–9
nutritional effects, 153
ossification centre visibility, 154
population comparison, 146
socioeconomic group, 152–3
Tanner–Whitehouse Standards, 149–53
UK standards, 149–50
see also bone age
skinfold thickness
Africans, 85, 86–8, 89, 283
altitude effects, 108
Asiatics, 114, 115, 116, 302–3, 304
European descendants, 58, 59–61, 62, 262–5
Europeans, 85, 246–7, 248, 249, 250
fat patterning, 215, 217
Indo-Mediterraneans, 128–9, 313–14, 315
obesity, 213–14
Pacific Islanders, 140, 143–4, 328, 329
population studies, 189–90
secular trends, 58, 61, 62, 88, 89
slaves, American from Africa, 75, 76, 77
smoking
birth weight, 205
passive, 205
social
conditions and menarche age, 171–2
mobility, 200–1
Social and Biological Predictors of Nutritional Status, Growth and Neurological Development, 192
social class
adults, 198–9
height, 198–200
menarche, 169–70, 198, 200
sex difference effects, 200
weight-for-height, 202
socioeconomic level, 198–202
Afro-Americans, 79
deciduous dentition, 157–8
height and social mobility, 200–1
number of children in family, 202
obesity, 202
obesity in industrialized society, 211–12
skeletal maturity, 152–3
unemployment, 201
weight-for-height, 202
Solomon Islanders
adults, 140
growth studies, 132, 133
South Africa, skeletal maturity, 149
stature measurement, 22, 23
stunting, 108
subcapular skinfold thickness
Africans, 85, 86–8, 89, 283
Asiatics, 114, 115, 116, 304
European descendants, 58, 60, 61, 264–5
European studies, 40, 42, 249, 250
fat patterning, 215–19
Indo-Mediterraneans, 128–9, 315
measurement, 26, 26
Pacific Islanders, 144, 329
Index

Sudanese, 67
supine length measurement, 22, 23
survival, bodily adaptations, 191
Sweden
skeletal maturity, 150
twin growth study, 178
Tanner–Whitehouse Standards of skeletal maturity, 149–53
skeletal age, 332, 333
teachers and pupil stress, 204–5
tempo of growth, 196, 197
secular height increase, 206, 207
socioeconomic class differences, 198
testis development, 174–5
The Measurement of Human Growth, 22
Tokyo (Japan), skeletal maturity, 151–2
toxins, 205
triceps skinfold thickness
Africans, 85, 86–8, 89, 281–2
Asiaties, 114, 116, 302–5
cancer correlation, 221
European descendants, 58, 59, 61, 62, 262–3
European studies, 40, 41, 43, 246–7, 248
fat patterning, 215–19
Indo-Mediterraneans, 128–9, 313–14
measurement, 25, 26
Pacific Islanders, 143, 144, 328
trunk
adiposity with migration and modernization, 144
and limb proportion racial differences, 186, 187
Turkana
growth studies, 69, 74
skinfold thickness, 85, 86–7
upper arm circumference, 84
weight for height, 77
Tutsi, growth studies, 74
TW1 and TW2 system of skeletal maturity, 149
Twa pygmies, 68, 81
twins, 176
dizygotic, 177
growth, 177–8
maturity, 178
menarche, 145
monozygotic, 177
undernutrition
adult size, 195
bone age, 198
height at puberty, 196
stunting, 194
unemployment, shortness in children, 201
United Kingdom skeletal maturity standards, 149–50
United Nations Children’s Fund, African work, 63
United States Agency for International Development, African work, 63
United States of America
children of African descent see Afro-Americans
genitalia development age, 173
height secular increase, 206
height and weight of European descendants, 47, 48–9
menarchal age, 170–1
skeletal maturity, 148, 151
skinfold secular trends, 58, 62
urbanization, 203
weight for height of European descendants, 51
weight secular changes, 48, 50
United States Health Examination Survey (1963–70), 148
United States National Center for Health Statistics, 44
upper arm circumference, 14
Africans, 84, 279–80
age estimates, 14
Asiaties, 113–14, 300–1
cancer correlation, 221
European ancestry, 258
Europeans, 243, 244
Indo-Mediterraneans, 126–7, 312
Papua New Guinea, 143, 327
urbanization
benefits, 202
influence on growth, 202–3
obesity, 218
shanty towns, 202
size of children, 202
US National Center for Health Statistics, 108
Utrecht (Holland), skeletal maturity study, 150
velocity curve, longitudinal-type, 11
velocity standards, 8–9
Venezuela, national growth survey, 47
Villermé, Louis-René, 191
Index

vitamin A absorption and intestinal parasites, 63
Warsaw (Poland), 108, 109, 125, 126, 140, 141
skeletal maturity, 150
water quality and infant growth, 126
Waterlow classification, 108
weaning, growth effects, 194
weight
African ancestry, 69–77, 270–1, 272–3
Africans, 69–77, 270–1, 272–3
Asiatics, 288–9, 290–1
Australian Aborigines, 135–8, 318–19
change, 212
European ancestry infants, 255–6
Europeans, 26–7, 220–1, 232–3
European descendants, 47–50, 253, 254
European infants, 32, 33, 34, 234–5
European studies, 26–7
Indo-Mediterraneans, 120–3, 307, 308
Pacific Islanders, 318–19
populations, 180–1, 183, 184
secular increase, 205–6
weight for height, 15
Africans, 77–9
Asiatics, 106, 107, 108
Australian Aborigines, 138–9, 140
Europeans, 27
European descendants, 47
Indo-Mediterraneans, 123–5
Pacific Islanders, 138–9, 140
studies, 28, 29, 30–2
WIC Program (USA), 194
Wopkaimin see Ok-speaking people
(Papua New Guinea)
World Health Organization, African work, 63

Zapotec Indians, 98, 104