

They're Playing My Song. Time to Work Out.

By STEVEN KURUTZ

FITNESS magazines and Web sites love to ask readers about their favorite workout music while presenting their playlists or suggestions from celebrities. Self.com features the “ ’80s cardio playlist,” which includes the short-shorts video classic “Wake Me Up Before You Go-Go” by Wham! On Fitnessmagazine.com, the singer Rihanna reveals her favorite workout songs — immodestly recommending four of her own for “when you have to pick up the pace on the treadmill.”

The playlist fixation has a scientific basis: Studies have shown that listening to music during exercise can improve results, both in terms of being a motivator (people exercise longer and more vigorously to music) and as a distraction from negatives like fatigue. But are certain songs more effective than others?

Generally speaking there is a science to choosing an effective exercise soundtrack, said Dr. Costas Karageorghis, an associate professor of sport psychology at Brunel University in England, who has studied the effects of music on physical performance for 20 years. Dr. Karageorghis created the Brunel Music Rating Inventory, a questionnaire that is used to rate the motivational qualities of music in the context of sport and exercise. For nearly a decade, he has been administering the questionnaire to panels representing different demographics, who listen to 90 seconds of a song and rate its motivational qualities for various physical activities.

One of the most important elements, Dr. Karageorghis found, is a song’s tempo, which should be between 120 and 140 beats-per-minute, or B.P.M. That pace coincides with the range of most commercial dance music, and many rock songs are near that range, which leads people to develop “an aesthetic appreciation for that tempo,” he said. It also roughly corresponds to the average person’s heart rate during a routine workout — say, 20 minutes on an elliptical trainer by a person who is more casual exerciser than fitness warrior.

Dr. Karageorghis said “Push It” by Salt-N-Pepa and “Drop It Like It’s Hot” by Snoop Dogg are around that range, as is the dance remix of “Umbrella” by Rihanna (so maybe the pop star was onto something). For a high-intensity workout like a hard run, he suggested Glenn Frey’s “The Heat Is On.”

Music preferences are as idiosyncratic as workout routines, of course. Allison Goldberg, a 39-year-old life coach and amateur runner who lives in Texas and who is training for the Houston Marathon on Sunday, has been running to the Green Day CD “American Idiot” because, she said, “There’s no way you can run slow to Green Day.” (Though she may not be listening on race day; a rule bars runners from using portable music players and

headphones.) Haile Gebrselassie, the Olympian from Ethiopia who has won the gold medal at 10,000 meters, often requested that the techno song “Scatman,” which has a B.P.M. of around 135, be played over the sound system during his races.

Ms. Goldberg also includes on her playlist “Don’t Phunk With My Heart” by the Black Eyed Peas (130 B.P.M.), “Mr. Brightside” by the Killers (150 B.P.M.), and “Dancing Queen” by Abba. The musical style that seems to most reliably contain a high B.P.M. is dance music, said Richard Petty, the founder of Power Music, a company that has produced workout compilations for instructors and fitness enthusiasts for two decades. “A rock song doesn’t have that same consistency,” said Mr. Petty, a former D.J. who takes a metronomic approach to making exercise music: He chooses a hit song with a catchy melody — say, “Gold Digger” by Kanye West — and produces a remix whose B.P.M. count is tailored to experience level and type of workout.

For a stroll walker going at a pace of around 3 miles an hour, a remixed track has a count of 115 to 118 B.P.M.; for a power walker going 4.5 m.p.h., the count is 137 to 139 B.P.M., while the B.P.M. for a runner elevates to 147 to 160.

The compilations, aimed largely at women doing cardio, with titles like “Shape Walk — 70’s Hits Remixed,” contain no pauses between songs. That unwavering beat allows a person to synchronize their movements to the music, something that Kate Gfeller, a music professor at the University of Iowa, said is crucial.

“Music provides a timing cue,” said Professor Gfeller, who after taking an aerobics class several years ago where the teacher picked music whose tempo didn’t match the moves, was inspired to study the components of music most important to a gainful workout. “It helps you to move more efficiently, which, in turn, can help you with endurance.” (She likes to warm-up for figure skating to the Buena Vista Social Club, in particular the songs “Candela” and “El Cuarto de Tula.”)

In other words, the best workout songs have both a high B.P.M. count and a rhythm to which you can coordinate your movements. This would seem to eliminate any music with abrupt changes in time signature, like free-form jazz or hard-core punk, as well as music that varies widely in intensity, like much of indie rock. It also rules out what the writer and neurologist Oliver Sacks calls “music which doesn’t have adequate rhythmic force.” “Here, I think of Wagner,” said Dr. Sacks, whose recent book, “Musicophilia,” discusses the link between rhythm and movement. “Nietzsche wrote of what he called Wagner’s ‘degeneration of the sense of rhythm.’ ”

Dr. Sacks is fond of swimming, and said the one-two-three cadence of his strokes often leads him to play a waltz in his mind. “Neurologically, it makes no difference if you’re listening to music or imagining it,” he said. “Vivid imagining activates motor parts.” Much of the research done on music and exercise is geared toward aerobic workouts like jogging and cardio. But as anyone who has heard Metallica blasting from a weight room stereo knows, music is a motivator in strength training, too. “The vast majority of

bodybuilders are fans of heavy metal, if not in their personal life at least in the gym,” said Shawn Perine, a senior writer at Flex magazine. Loud, aggressive music, he said, “keeps you elevated, especially in between sets.”

Mr. Perine prefers to work out to hip-hop. “Let’s say you’ve done a grueling set of squats,” he said. “You’re out of breath, and L. L. Cool J’s ‘Mama Said Knock You Out’ comes on. Your energy won’t flag.”

But is there a perfect workout track, a song that transcends exercise forms and personal preferences? One comes up repeatedly: “Gonna Fly Now,” the theme from “Rocky.” In a forthcoming book on music and sport that he contributed to, Dr. Karageorghis writes that the song “evokes a state of optimism and excitement in the listener,” and Ms. Goldberg said it helped her get through her first marathon. The band from Bishop Loughlin Memorial High School in Brooklyn has set up along the New York City Marathon route and performed the “Rocky” theme for runners each race day for the last 30 years. Bill Conti, the song’s composer, shed light on why it continues to motivate. “I put a Da-Da! in the beginning,” Mr. Conti said. “any kind of Da-Da! gets your attention. Then it goes into a tune we’ve heard played so weepily throughout the movie, but now I put a beat behind it and put it in a major key.” When Rocky runs up the museum steps, musically, Mr. Conti said, “I am milking it as much as I can.”

Still, Mr. Conti is reluctant to overanalyze it. “Music is anti-intellectual,” he said. “We know the Greeks went into battle listening to music in the Dorian mode. I can only imagine some Greek guy said, ‘This works.’ ”

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